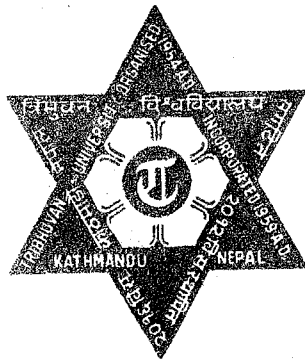


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CONTENTS

	<u>Page</u>
1. An Annotated Bibliography on the Thakalis Michael Vinding & Krishna Bahadur Bhattachan	1-24
2. Fertility and its Proximate Determinants in a Tamang Village of North Central Nepal Thomas E. Fricke	25-49
3. Archaeological Remains of Lumbini: The Birth-place of Lord Buddha R.N. Pandey	51-62
4. Survey Report: Herding and Socio-economic Change Among Langtang Tibetans Tox Cox	63-74
5. Contributions to Nepalese Studies: Cumulative Index 1973-1985 by Theme & Author Purna P. Amatya	75-106
6. Resource Management in the Arid Himalaya: Problems and Prospective Solutions Alton Pyers	107-136
Book Review:	
The Mollas of Mustang: Historical, Religious and Oratorical Traditions of the Nepalese-Tibetan Borderland Prayag Raj Sharma	137-140
The Newari Language: A Working Outline Tej R. Kansakar	141-143

An Annotated Bibliography on the Thakalis

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Anthropology
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Introduction

In relation to their number (an estimated 1,500 households) the Thakalis may be the most studied group in Nepal. The Thakalis have been studied by 15 trained anthropologists who have published nearly 50 works on them.

There are several factors contributing to this situation. First, Western anthropologists interested in the Himalayan Region come to Nepal because of difficulties in obtaining research permission in neighbouring countries. Secondly, anthropologists are generally more attracted by the people of the Hills and Mountains, than by those of the Plains. Thirdly, fieldwork in Thak Khola (the homeland of the Thakalis) involves no great hardship: communication is reasonable, the climate is pleasant, people are friendly and cooperative, and the accommodation and food are excellent. Finally, the Thakalis are a good choice for anthropologists interested in trade, migration and social change.

Nepal was virtually a closed country for Westerners from its foundation in the late 18th century until 1951. The few Westerners who visited the country were permitted to travel only along the main trail from India to the Kathmandu Valley.

In 1952 Toni Hagen (the Swiss geologist) and Giuseppe Tucci (the late Italian Tibetologist) became the first Westerners to visit Thak Khola. At that time little ethnographical information existed on the Thakalis. Traders and pilgrims from neighbouring countries had been visiting Thak Khola for centuries, but none have left written accounts on their journeys. Hari Ram from the Survey of India passed through Thak Khola in 1873, and based on his observations the area was detailed on a map published by the Survey in 1915. The Japanese monk Ekai Kawaguchi stayed secretly in Thak Khola for several weeks in 1900 and his book Three Years in Tibet (1909) includes a few observations on the valley.

Jiro Kawakita (Japan) was the first anthropologist to visit Thak Khola. Kawakita was a member of Kihara's scientific expedition to the Nepal Himalayas 1952-53 and stayed in Thak Khola for less than one month. Kawakita revisited Thak Khola in 1958, and again in 1963 in connection with fieldwork among the Magars south of the valley. Kawakita

has published some general ethnographical information on the Thakalis in Ethno-Geographical Observations of the Nepal Himalayas (1957) and The Hill Magars and their Neighbours (1974).

Shigeru Iijima (Japan) was a member of Kawakita's 1958 expedition to the Nepal Himalayas and spent about one month in Thak Khola. He revisited Nepal in 1975-76, 1980-81 and 1984 to study Thakalis in Kathmandu. The main focus of his research is social and cultural change. Iijima has published six articles on the Thakalis, namely The Thakali, A Central Himalayan Tribe (1960), Hinduization of a Himalayan Tribe in Nepal (1963), Two Types of Plain Emulation Among the Thakalis and the Karen (1968), A Note on Thakali Leadership (1977), Ecology, Economy and Cultural Change Among the Thakalis in the Himalayas of Central Nepal (1977), and The Thakalis; Traditional and Modern (1982).

Corneille Jest (France) is well-known for his study of the Tibetan speaking people of Dolpo District. In connection with that study he passed through Thak Khola several times in the 1960's and collected information on the Thakalis. Jest's contributions on the Thakalis deal mainly with religion and include Les Thakali, Note préliminaire concernant une ethnie du Nord-Ouest du Népal (1966), Chez les Thakali, cérémonie consacrée aux ancêtres du clan (1969), Carte écologique du Népal, Région Annapurna-Dhaulagiri (1970, with J.F. Dobremez), Fête du pa-la à Chim, Kali Gandaki (1974), La Fête des Clan chez les Thakali, Spre-lo 1968 (1974), and Encounters with Intercessors in Nepal (1976).

Christoph von Furer-Haimendorf (England) was the first anthropologist to live for a long period among the Thakalis. He stayed in Thak Khola for more than six months in 1962, and revisited the valley in 1972 and 1976. Furer-Haimendorf has studied mainly Thakali trade, but his work also deal with Thakali history and social organisation. Furer-Haimendorf's contributions on the Thakalis are Caste Concepts and Status Distinctions in Buddhist Communities of Western Nepal (1966), Morals and Merit, A Study of Value and Social Control in South Asian Societies (1967), Himalayan Traders, Life in Highland Nepal (1975), Trans-Himalayan Traders in Transition (1978), Social Change in a Himalayan Region (1981), and Social Structure and Spatial Mobility among the Thakalis of Western Nepal (1981).

Dor Bahadur Bista (Nepal) stayed in Thak Khola in 1962 and has published his findings on the Thakalis in People of Nepal (1967) and The Political Innovators of Upper Kali Gandaki (1971).

Pierre Valeix (France) stayed in Marpha (Thak Khola) for about one year in 1969-70. This research has resulted in one article, Marpha: aspects humains et économiques d'un village du Pâc Gâu (1974).

Donald A. Messerschmidt (USA) is a well-known authority on the Gurungs, but has also researched the Thakalis. His findings on the Thakalis are contained in Parallel Trade and Innovation in Central Nepal: The Cases of the Gurung and Thakali Subbas Compared (1974, with N.J. Gurung), Dhikurs: Rotating Credit Associations in Nepal (1978), and The Thakali of Nepal: Continuity and Change (1982).

Michael Vinding (Denmark) did fieldwork among the Thakalis of Thak Khola in 1972, 1975-78, and 1980-81. His contributions on the Thakalis deal with history, economy, social organisation and religion, and include The History of the Thakaali according to the Thakaali Tradition (1977, with S. Gauchan), The Local Oral Tradition about the Kingdom of Thin Garab Dzong (1978), A Preliminary Report on Kinship Terminologies of the Bodish Section of Sino-Tibetan Speaking Peoples (1979), Marriage Systems of the Thakalis and Related Groups of the Bodish Section of Sino-Tibetan Speaking Peoples (1979/80), A Note on Patrilineal Descent Groups among the Thakalis of the Nepal Himalayas (1981), The Thakalis as Budhists: A Closer Look at Their Death Ceremonies (1982), A Comment on 'Two 12-Year Festivals in the Thak Khola' (1983), Making a Living in the Nepal Himalayas: The Case of the Thakalis of Mustang District (1984), and The Thakalis should say: "We are Thakalis and we are proud of being Thakalis" (1985).

Andrew E. Manzardo (USA) did fieldwork among Thakali migrants (mainly in Pokhara) from 1974 to 1977. Manzardo's works deal with ecology, animal husbandry, trade, impression management and change, and include Cost-cutting, Caste and Community: A Look at Thakali Social Reform in Pokhara (1975, with K.P. Sharma), Factors in the Potential Regeneration of Thak Khola (1976), Ecological Constraints on Trans-Himalayan Trade in Nepal (1977), To be Kings of the North: Community, Adaptation and Impression Management in the Thakali of Western Nepal (1978), Impression Management and Economic Growth: The Case of the Thakalis of Dhaulagiri Zone (1982), and High Altitude Animal Husbandry and the Thakalis of Thak Khola: Biology and Trade in the Himalayas (1984).

Reinhard Gräve (FR Germany) stayed in Thak Khola for three months in 1978 and two months in 1980. He has published the article A Shaman's Concept of Illness and Healing Rituals in the Mustang District, Nepal (1981/82).

Krishna Bahadur Bhattachan (Nepal) undertook a study of the Thakalis of Pokhara in 1979. His findings are presented in the dissertation Modernization and Social Change among the Thakalis in Nepal (1980). Other contributions include The Process of Thakali Integration (1983) and The Social Status of Thakali Women: How much Better, How much Worse? (1985).

Ram Bahadur K.C. (Nepal) undertook a one-month fieldwork among the Thakalis of Pokhara in 1980. The results of the study are contained in the dissertation Immigrant Thakalis of Pokhara: An Exercise in Urban Ethnography (1980).

Barbara Parker (USA) carried out fieldwork for 18 months in Marpha (Thak Khola) in 1981-83. Her findings have yet not been published.

Susan von der Heide (FR Germany) studied Thakali emigrants (mainly in Kathmandu) for about one year in 1981-82. The results of this research are yet not published.

Finally, Bill Fisher (USA) conducted a two-year research project among Thakalis in Myagdi and Baglung districts in 1982-84. He is presently completing a thesis on Thakali emigrants.

Besides anthropologists, other scientists have studied Thak Khola and Thakali culture. The Tibetologists G. Tucci, D.L. Snellgrove, A.W. Macdonald and D. Jackson have researched the history and religion, C. Kleinert, C. Milliet-Mondon, and P. Morillon and P. Thouveny the architecture, and J.F. Dobremez and M. Fort the ecology of Thak Khola. M. Hari and M. Mazaudon have studied the Thakali language.

In addition to the above-mentioned professional scholars, Thakalis (including, among others, Dhruba Kumar Bhattachan, Narendra Gauchan, Omkar Prasad Gauchan, Prakash Gauchan, Narendra Serchan and Chandra Man Thakali) have studied and published works on Thakali history and culture. While Western anthropologists have focussed especially on trade, migration and social change, the Thakalis' main interest have been the question of their origin. These studies are published in Nepali language, and have only seldom been referred to in the works of Western anthropologists.

Besides the older generation, young university educated Thakalis have studied their culture and society. The sociologist Krishna Bahadur Bhattachan (presently teaching at the Department of Sociology/Anthropology, Tribhuvan University) has researched problems of modernization and social change. Som Prasad Gauchan (a Ph.D. candidate in Political Science, Delhi University) is interested in the political aspects of Thakali society, and Yasso Kanti Gauchan is studying socio-cultural change among the Thakalis of Kathmandu for a M.A. dissertation.

In conclusion, Thakali culture and society have been examined in numerous works by a large number of scientists and Thakalis, but some aspects (e.g. the traditional political organisation) are little researched, and a monograph has not yet been published. Also, there is a conspicuous lack of physical anthropological and archaeological information on the Thakalis and Thak Khola.

Works in Nepali Language

Bhattachan, Basanta, 1980a. Thakālī Jātiko pabitra 4 devatā: ek parīcaya. (The Four Sacred Gods of the Thakalis: An Introduction). Khāgalo, Vol. 1, pp. 31-32.

Presents a brief note on the gods of the four Thakali clans.

1980b. Thakālī Jātiko mahān parba bārha barse kūmbhamelāko kāryakramko ruprekḥā. (An Outline of the Programme of the Thakalis' Sacred 12-Year Festival). Khāgalo, Vol. 1, pp. 39-41.

Contains the programme of the 17-day long lha phewa festival which the Thakalis celebrate every twelfth year.

— 1980c. Thakālī samāj kāthmāṇḍu gatibidhi. (Activities of the Thakali Society, Kathmandu). Khāgalo, Vol. 1, pp. 47-50.

Describes the history and activities of the Kathmandu Thakali Society, as well as the Society's rules and regulations.

Bhattachan, Birendra, 1985. Thakālī utpatti ra itihās. (The Origin and History of the Thakalis). Phālo, Vol. 2, pp. 61-65.

Based on secondary sources the author provides an introduction to the history of the Thakalis.

Bhattachan, Dhruva K. 1975. Thakālī jātīko mahān parba. Ek samikṣātmak paricaya. (The Thakalis' Great Festival. A Review). Dainik Nirṇaya, 27 March, 3 April and 9 April 1975.

Having described the origin of the Thakalis, the author details the torenla festival which is the Thakalis' main annual festival.

— 1977. Dhikurī prathā ek sājhā byabasthā. (The Dhikur - A Cooperative System). Ahwān, 31 Bhādra 2034.

Describes various types of rotating credit associations (dhikur) and examines the origin and importance of these associations among the Thakalis.

— 1979. Thakālī jātīko purātaṇ saṁskṛti syopen lawa (kumār yātrā) ko ek jhalak. (A Glimpse of Syopen lawa - the Thakalis' Ancient Culture. Pokhara: Dhruva K. Bhattachan.

Provides information on the syopen lawa which is an initiation ceremony for young boys.

— 1980. Deśpūjā (Hyūlpūja) ek samikṣātmak paricaya. (Community Worship - A Review). Naulo Dāko, 2 Baisakh 2037.

Examines the yhūl pūja (village sacrifice ceremony) as performed in rural and urban Thakali settlements.

— 1982. Thakālī jātīko saṁrakṣikā devī 'narijhowa'. (Narijhowa - the Thakalis' Protective Goddess). Narijhowa, Vol. 1, pp. 25-30.

Presents the myth relating to the origin of lha nari jhowa, the protective goddess of Thasang (the present Kobang Panchayat), the homeland of the Thakalis.

Bhattachan, Dirgha Narayan, 1979. Thakālī. Dhaulāgiri, Vol. 1, No. 2, pp. 37-43.

Discusses the origin of the Thakalis.

Bhattachan, Hari Narayan, 1983. Hindu dharma ra torenla. (Hindu Religion and Torenla). Phālo, Vol. 1, pp. 57-58.

Compares the Thakalis' torenla festival with the Hindu phāgu festival.

Bhattachan, Jyoti, 1985. Thakālī saṁskṛtiko jagernā. (Preservation of Thakali Culture). Phālo, Vol. 2, pp. 54-57.

Examines the role of women in the preservation of Thakali culture.

Bhattachan, Krishna Bahadur, 1983. Thakālī samastikaraṇ ko prakṛyā. (The Process of Thakali Integration). Phālo, Vol. 1, pp. 46-48.

Discusses the problems of Thakali integration and points out the need for a central Thakali organisation to maintain Thakali cohesion.

_____. 1985. Thakālī mahilāko sāmājīk sthiti: kati rāmro kati narāmro. (The Social Status of Thakali Women: How good, how bad?). Phālo, Vol. 2, pp. 67-70.

Examines the status of Thakali women which, the author argues, is better than of other Nepalese women.

Bhattachan, Tilak, 1979. Thakālī jātikō choto cināri. (A Brief Introduction to the Thakalis). Dhaulāgiri, Vol. 1, No. 1, pp. 28-30.

Provides a brief introduction to Thak Khola and the Thakalis.

Bhattachan, Vidya, 1985. Badlido nepālī samājkā cunautīharu ra thakālī nārī. (Challenges of the Changing Nepali Society and the thakālī women). Phālo, Vol. 2, pp. 58-60.

Discusses the challenges facing Thakali women as members of the Nepali society.

Gauchan, Binod, 1985. Nepālī sāhitya ra thakālī jātiya sāhitik yātrā: ek carcā. (Nepali Literature and the Thakali Community's Literary Voyage: An Introduction). Phālo, Vol. 2, pp. 34-38.

Examines the contributions of Thakalis in Nepali literature and poetry.

Gauchan, Mana Kanti, 1985a. Thakālī yubā piṇdhī: sārthak, upayukta ra bibekpūrṇa bikalpa ko khojīmā. (The Thakali Youth Generation: In Search of a Meaningful, Appropriate and Rationale Alternative). Phālo, Vol. 2, 1-3.

Discusses problems facing contemporary Thakali youth.

- 1985b. Bibāha: sajātiya kī antarjātiya ? (Marriage: Intra- or Intercaste ?) Phālo, Vol. 2, pp. 16-21.

Contains a collection of opinions of Thakali youth on intra- and inter-caste marriage.

Gauchan, Narendra, 1980. Thākkholāko digdarśan. (A Glimpse of Thak Kholā). Khāgalo, Vol. 1, pp. 43-45.

Describes the Thakuri origin of the Thakalis as well as the 1855 Nepal-Tibet War.

- 1983. Phālo (bhādra mahināko melā). (Phālo, the festival of Bhādra month). Phālo, Vol. 1, pp. 19-30.

Details the syopen lawa festival which is celebrated in the month of bhadra (August/September).

Gauchan, Omkar Prasad, 1980a. Bārabarse kumbhamelāko bandej. (The Rules of the 12-Year Festival). Khāgalo, Vol. 1, pp. 5-9.

Presents the rules of the lha phewa festival prepared in 1896.

- 1980b. Haṇsa rājāko thākṃā śāsanthiyo bhanne ullekh bhayeko kāgaj. (Document proving the reign of Hansa Raja in Thak). Khāgalo, Vol. 1, pp. 11-15.

Contains a translation of the Cīmang bemca which deals with the old kingdom of Sumbo Garab Dzong (Thinī). The text includes a reference to Hansa Raja and Nima Ranī of Thak.

- 1980c. Dharmapatra. (Duteous Document). Khāgalo, Vol. 1, pp. 17-19.

Contains a resume of the Cīmang bemca.

Gauchan, Prakash, 1981. Hāmro deśh hāmro jāti. Nepālkā thakālīharuko ek paricaya. (Our Country, Our Caste. An Introduction to Nepal's Thakalis). Kathmandu: Ratna Pustak Bhandar.

Provides an introduction to Thakali history, society and culture.

- 1985. Thakālīharuko paricaya: kehī thap kurāharu. (An Introduction to the Thakalis: Some Additional Points). Phālo, Vol. 2, pp. 26-30.

Argues that the Thakalis are of Thakuri origin.

Gauchan, Som Prasad, 1985. Thakālī samāj ra thakālī yubā barga. (Thakali Society and Thakali Youth). Phālo, Vol. 2, pp. 31-33.

Discusses problems faced by contemporary Thakali youth.

Gauchan, Yasso Kanti, 1983. Thakālī yubā pariwār - pragatī pratibedan. (Thakali Youth Organisation - A Progress Report). Phālo, Vol. 1, pp. 61-62.

Describes activities undertaken by the Thakali Youth Organisation.

1985a. Sodhpatra/pustak samikṣa. Uttarkā rājāharu huna: pascim nepālkā thakālīharuko samudāya, anukūlan ra prabhāb byabasthāpan. (Book Review. To be Kings of the North: Community, Adaptation and Impression Management in the Thakalis of Western Nepal). Phālo, Vol. 2, pp. 23-25.

A critical review of Manzardo's 1978 dissertation.

1985b. Samasyā saṅga ḍarāyara bhanda cunautidīyara samādhān ko upāya khojnu badhī sārthak ra arthapurana huncha. (Instead of being Afraid of Problems, it is more Fruitful and Meaningful to find Their Solution by challenging them). Phālo, Vol. 2, pp. 4-13.

In this interview with Krishna B. Bhattachan, Ms. Gauchan discusses the problems facing Thakali youth, and their role in the Nepali society.

His Majesty's Government of Nepal, 1974. Thakālī - janasaṅkhyā ra janajīvan. (The Thakalis - Population and Life). In Mecī dekhi mahākālī, Vol. III, Kathmandu: Department of Information, HMG of Nepal.

Provides a brief introduction to the Thakalis.

Malla, Mohan Bahadur, 1977. Thāk ra thakālī. (Thak and the Thakalis). Gorkhapatra, 18 Baisākh 2034.

Describes briefly the history of the Karnali region and Thak Khola, and argues that the Thakalis are of Thakuri origin.

Serchan, Basanta, 1982. Thakālī jātī - ek samikṣa. (The Thakali Group - A Review). Narijhowa, Vol. 1, pp. 15-18.

Examines socio-cultural change among Thakali emigrants.

Serchan, Lokendra, 1983. Thakālī yubā jagat ājako paripreksamā. (Thakali Youth in the Present Context). Phālo, Vol. 1, pp. 49-54.

Discusses the problems facing Thakali youth and suggests measures to solve these problems.

1985. Haṁsa rājā bāre prakāṣit dastābejharu kelādā. (Analysing the Documents published on Hansa Raja). Phālo, Vol. 2, pp. 40-45.

Based on historical documents published by Omkar P. Gauchan, the author describes Hansa Raja's reign and territory, and marriage relations with Jumla kings.

Serchan, Nagendra, 1982. Lha phewa ko paricaya. (An Introduction to Lha phewa). Butwal: Chandra Mohan Serchan.

Deals with the lha phewa festival and the origin of the Thakalis.

Serchan, Prithbilal, 1982. Thakālī saṅskṛtī bikās samiti, Siddhārthanagarko pragatiko jhalak. (Progress of the Thakali Culture Development Committee, Siddharthanagar). Narijhowa, Vol. 1, pp. 1-5.

Mentions the activities undertaken by the Siddharthanagar Thakali Society.

Serchan, Purnawati, 1985. Udyog byabasāyamā thakālī nārīharuko bhūmīkā. (The Role of Thakali Women in Industries). Phālo, Vol. 2, pp. 71-72.

Discusses the role of Thakali women in industrial activities.

Sharma, Keshav Prasad, 1977a. Thakālī samāj sudhār saṅgathan: ek samāj sāsṭriya dṛṣṭikon. (Thakali Social Reform Organisation. A Sociological Perspective). Pancāyat Darpan, Vol. 7, No. 3, pp. 60-68.

Describes the form and functions of the Thakali Social Reform Organisation of Pokhara.

— 1977b. Dhikur prathā thakālī jātiko ek mauḷik ārthik kam sāmājīk byabasthā. (Dhikur System. An Unique Economic and Social Organisation of the Thakalis). Pancāyat Darpan, Vol. 8, No. 1, pp. 44-57.

Examines the socio-economic role of the dhikur system in Thakali society.

Sharma, Nagendra, 1976. Thakālī. pp. 47-50 in Nepālī Janajīvan. Darjeeling: Achala Bhagabati Publications.

Contains a brief introduction to the Thakalis.

Shrestha, Tek Bahadur, 1976. Parvatakā kehī tāmrapatra. (Some Copper Documents from Parbat). Contributions to Nepalese Studies, Vol. 3, No. 2.

Includes reference to Thak Khola in the 17-18th centuries.

Sijapati, Lalit Jung, 1985. Purānā kāgaj ra kathā kā ādharma sijāpati baṅsako pūrba pūrkhā haru. (The Ancestors of the Sijapati Clan on the Basis of Old Documents and Stories). Phālo, Vol. 2, pp. 1-11.

Contains a genealogy of the Sijapati (Jumla) kings and mentions about the exile to Thak Khola of Hansa Raja, the youngest prince of Sijapati.

Thakali, Chandra Man, 1980. Thākkholā ra thakālīko cinhārī. (An Introduction to Thak Khola and the Thakalis). Khāgalo, Vol. 1, pp. 21,24.

Argues that the Thakalis are of Thakuri origin

— 1982a. Thakālīharuko iṣṭadevī mahālakṣmī. (Thakalis' goddess Mahalaksmī). Gorkhāpatra, 4 December 1982.

Retells the myth of lha nari jhowa whom the Thakalis identify as Mahalaksmī.

— 1982b. Thakālīharuko phāgu cārko mahatwa. (The Importance of the Thakalis' Phagu Festival). Narījhowa, Vol. 1, pp. 9-11.

Describes the torenla festival which the Thakalis celebrate in the Nepali month of phāgu.

— 1983. Thakālīharuko 4 jātiya devtāko 12 barsa kumbhamelāko aitiḥāsik kathā. (A Historical Account of the Thakalis' Four Gods' 12-Year Festival). Phālo, Vol. 1, pp. 37-39.

Retells the myths relating to the lha phewa festival.

Thakali, Krishna Lal, 1977. Mohan malla ko thāk ra thakālī. (Mohan Malla's Thak and the Thakalis). Gorkhāpatra, 1 Srawan 2034.

Rejects Malla's conclusion that the Thakalis are of Thakuri origin.

Thakali Sewa Samiti, 1983. Mūl bandej. (Main Restrictions). Kobāng (Mustang District): Thakālī Sewā Samiti Central Office.

Contains the constitution of the National Thakali Association, as approved by the Association's first general assembly, held in Pokhara, 1983. Besides the Association's rules and regulations, the constitution includes rules relating to life cycle ceremonies, and outlines a programme for the preservation of Thakali culture.

— 1984a. Mūl bandej (pratham saṁsodhan 2041). (Main Restrictions, First Amendment 2041). Kobāng (Mustang District): Thakālī Sewā Samiti Central Office.

Contains the constitution of the National Thakali Association, as amended by the Association's second general assembly, held in Kobang, 1984.

1984b. Thakālī sewā samiti ko kāryakram tathā dhikurī niyamābalī.
(The Programme of the Thakali Service Association and Rules of
Dhikuri). Kobang (Mustang District): Thakali Sewa Samiti Central
Office.

Contains the rules and regulations governing the establishment and
functions of dhikur, as approved by the Association's second general
assembly. In addition, it includes the Association's ten-point
programme relating to social, cultural, economic, legal, religious,
intellectual, historical, development, national and moral activities.

Tulachan, Indra Bahadur, 1980. Thakālī samāj ra dharma pancāyat. (The
Thakālī Society and the Dharma Pancāyat). Khāgalo, Vol. 1, pp. 2-4.

Describes the form and functions of the Dharma Pancayat which con-
sists of the 13 headmen of Thaksatsai. This political body tradi-
tionally looks after the internal affairs of Thaksatsai.

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*Fertility and its Proximate Determinants in a Tamang Village of North
Central Nepal*

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Introduction

The analysis of fertility is critical to any discussion of a community's environmental adaptation. Fertility and mortality schedules together determine the major characteristics of a population closed to migration—such as age distribution and growth rate—that have a direct bearing on household economy and the balance between community size and available resources. In addition, community level fertility data is lacking in Nepal and, although the situation is improving, it is still necessary to accumulate studies from a range of districts (cf. Macfarlane 1978).

Although the value of fertility data is not in doubt, the small size of the populations that anthropologists typically study raises questions about how far analysis can go. One major concern is unique to small populations: that of random fluctuations in vital rates or other population characteristics through time. While minor disruptions in more general trends can be masked by the sheer weight of numbers in large groups, chance events will have a more visible impact in smaller groups. If the special explanations for anomalous rates or distributions aren't known, the analysis of data can be seriously affected. Other problems can be more easily dealt with. For example, defining the population and finding methods appropriate to the data are concerns peculiar to small populations (Carroll 1975:3; Feeney 1975: 21). Otherwise, demographic analysis presents much the same set of difficulties for any size unit. As Feeney (1975: 44-45) cautions:

In practice, all data are in error. The issue is never whether or not error is present, but what the magnitude and the direction of the error are and the significance of this magnitude and direction for any particular analysis.

Thus, there is no a priori reason to believe that the demographic analysis of anthropological populations is without value. A growing body of technical literature (Howell 1974, 1976; Weiss 1973, 1975) suggests just the opposite and substantive studies have been carried out in populations of very small size: a Thai village of 1,718 people (Lauro 1979), a Malaysian group of 733 people (Fix 1977), and a !Kung population of 569 (Howell 1979).

The following is a discussion of fertility and its determinants within a single village population in Nepal.¹ Recent demographic analyses of communities (for example: Goldstein 1976; Ross 1981; Levine 1982; Dahal 1983) have considered the important institutional determinants of fertility within various regions of Nepal. In this paper I take a formal demographic look at data from a Tamang village in Northern Dhading District. The application of models indicates that procedures developed for larger population aggregates can be used at the community level while important suggestions for future research arise from the discussion. My procedure is to establish the lack of trends in fertility within this population by examining the fertility of women over age 45. This is followed by an analysis of fertility information from all women and an examination of the proximate determinants.

Timling: context and data

Data for this analysis come from the marriage and fertility histories of 150 Tamang women in the village of Timling. In addition, I have included the experiences of two sterile women, one of whom was never married and the other who was married but left the village prior to my residence. Situated on the upper Ankhu Khola at an altitude ranging from about 6500 to 7000 feet (see Fig. 1), Timling is inhabited by 132 households of western Tamang pursuing an agro-pastoral adaptation typical of the middle hills (Alirol 1976).² The population of 639 includes 325 females and 314 males distributed on an age pyramid that indicates an intermediate growth rate similar to the Gurung of Thak (Macfarlane 1976: 282; Fricke 1984: 68-72). While the population for the whole of Nepal is characterized by a distribution with 52% younger than age 20 (Banister and Thapa 1981: 22), the Tamang of Timling have only 43.8% below this age.³ Thus analysis of this community's fertility is a useful illustration of an atypical pattern within the Nepali context.

The methods of field collection of fertility data included interviews of all ever-married or ever-pregnant women within the village. Information on the timing of all birth events was gathered in addition to data for pregnancies that resulted in miscarriages and stillbirths. An unusual feature of this data for an illiterate population is the high reliability of event timing in Timling. The Tamang of this area actively use the Tibetan lho calendrical system which involves a 12 year cycle. Each year in the cycle and individuals born in that year

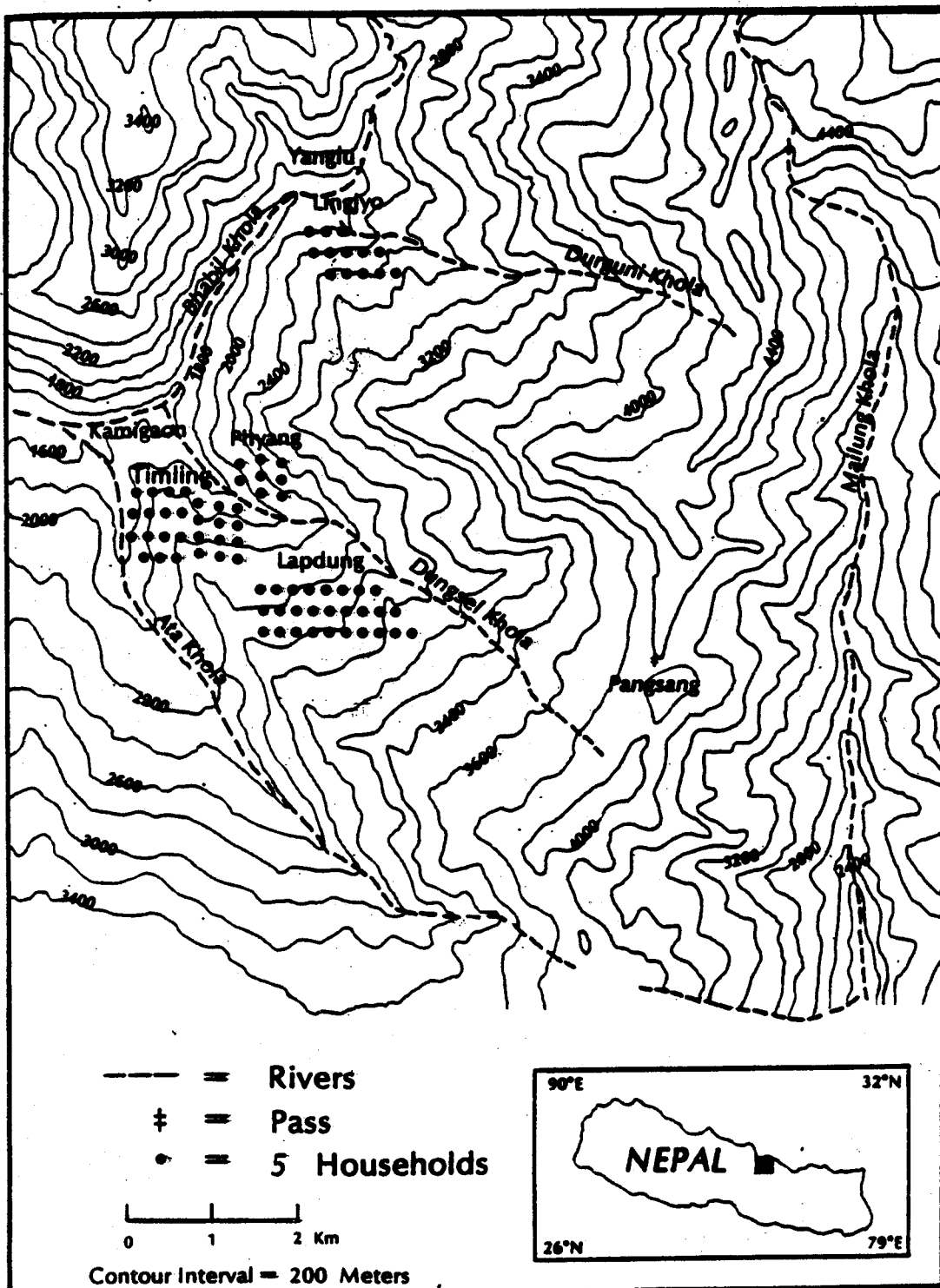


Figure 1 Map of Timling and its daughter villages. The traditional territory is bounded by the Ata and Mailung Kholas and the ridgeline above the Bhabil Khola.

are designated by a particular animal and virtually all Tamang in Timling knew their animal year of birth and the number of cycles they have lived through. In addition, they often knew this information for a wide circle of relatives and friends. Age is a popular topic of conversation throughout the village and age distinctions are built into kinship terminology. The quality of data for event timing is further supported by independent cross checks of reported ages on pregnancy history forms with a village census conducted at an earlier stage of fieldwork.⁴

Finally, sexuality is an easy topic of conversation in Timling and no woman was embarrassed to discuss these events with a male researcher. Even obvious pre-marital pregnancies were openly discussed.

The experience of women of complete fertility

If rates are not drastically changing in Timling, then the experience of women who have completed their fertility is the best indicator of the present and future fertility performance for all women in the village. The 56 women in the Tamang sample who have completed their fertility represent an age span of 31 years from age 46 to age 76 at the time of fieldwork. At one extreme, this means that one 5 year cohort is still technically in the fecund period since a small number of births do occur between 45 and 50; at the other extreme is a group of women who have been past the fecund period for at least 25 years. Within this kind of range it would be assumed that the reported experience of older cohorts suffers from the effects of memory bias.

Table 1: Parity distributions for 5 year cohorts of women 45 years old and older.

Women 15 years old and older														
Age	(N)	Number of births											$\bar{X}$	
		0	1	2	3	4	5	6	7	8	9	10		11
45-49	(13)	0	1	2	1	1	2	2	2	1	1	0	0	5.00
50-54	(11)	0	0	0	1	2	3	2	2	0	1	0	0	5.55
55-59	(7)	0	1	3	0	1	0	1	0	1	0	0	0	3.57
60-64	(9)	0	0	1	1	2	1	0	2	0	1	0	1	5.78
65-69	(8)	0	0	1	0	0	4	2	0	1	0	0	0	5.25
70+	(8)	0	0	0	1	2	0	1	2	1	0	1	0	6.13
Total	(56)	0	2	7	4	8	10	8	8	4	3	1	1	5.25

Source: Timling Marriage and Fertility History.

Table 1 presents parity distributions for these 5 year cohorts. Although this breakdown creates extremely small groups, it provides a manageable way to examine the completed fertility record for trends in the total number of births per woman.

We can see in this table that there is no evident trend in total births. In fact, the largest average number of births has been reported by the oldest cohort—evidence to contravene suggested memory bias. The cohort experiencing the low average of 3.57 births per woman is anomalous in relation to the others, but there is no way to make the case that inconstant memory is the cause of this aberration. Other than this, the total number of births to women of completed fertility has remained fairly constant over the 30+ years of experience represented

Table 2: Age-specific fertility rates for women
45 years old and older.

Age	Parity											Total	At Risk	ASF
	1	2	3	4	5	6	7	8	9	10	11			
15-19	7	2	0	0	0	0	0	0	0	0	0	9	280	.032
20-24	34	15	4	0	0	0	0	0	0	0	0	53	280	.189
25-29	13	27	19	8	1	1	0	0	0	0	0	69	280	.246
30-34	2	8	15	17	10	2	1	0	0	0	0	55	280	.196
35-39	0	1	8	13	16	13	5	2	1	0	0	59	280	.211
40-44	0	1	1	5	8	8	8	5	3	1	0	40	280	.143
45-49	0	0	0	0	0	1	3	2	1	1	1	9	274	.033
Total	56	54	47	43	35	25	17	9	5	2	1			
Total women.....	56													
Total births.....	294													
Mean parity.....	5.25													

Source: Timling Marriage and Fertility History.

Table 2 presents the age-specific rates for these 56 women as if they represented a single cohort's experience. The rationale for this aggregation follows Howell (1979). Information is given for age of mother at birth parity x in addition to age-specific rates. The slightly reduced number of years in the 45-49 year group accounts for the small number of woman-years remaining before all women move out of the theoretical fecund period.

Considering the small sample size, we are presented with a remarkably regular picture of fertility in Timling. The low rates at the beginning of the fecund period followed by swift ascent and slow decline in age-specific fertility is consistent with the record for third world and natural fertility populations in general. The unusual pattern of higher age-specific rates in the 35-39 age group than the 30-34 age group is minor and easily the result of random events in a population of this size.

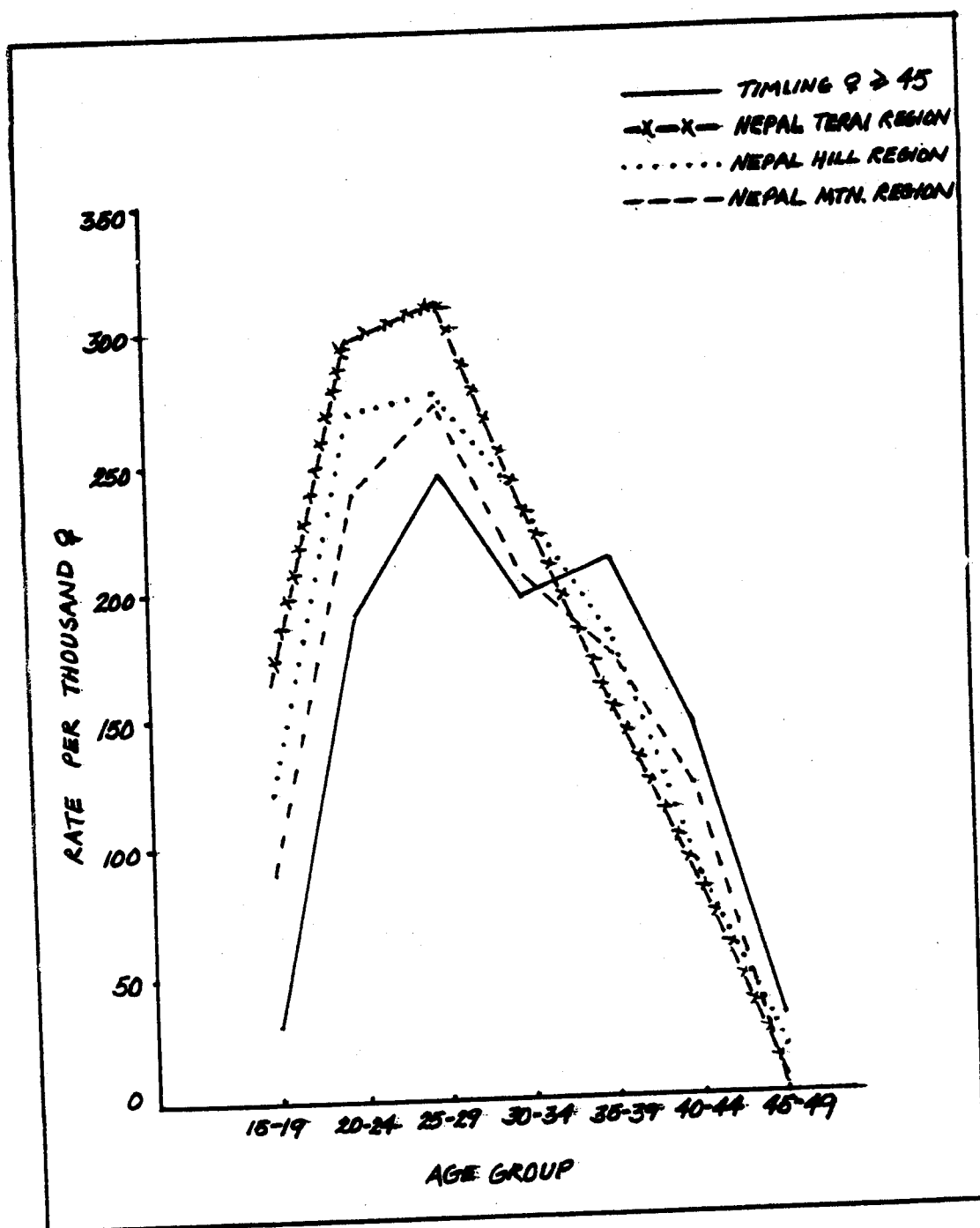


Figure 2: Age-specific fertility for Timling and three regions of Nepal compared.

Figure 2 graphs these rates and compares them to the various regional rates within Nepal (Banister and Thapa 1981). Of particular interest is the close correspondance between Timling's rates and those of the mountain region in comparison with those of other regions in Nepal. It is worth noting here that Timling's cultural and economic history aligns it more closely with the mountain than with hill regions. An especially interesting contrast exists between peak age-specific rates for the Terai and Timling.

Another way to look at this information is to compare the average fertility experience of Timling women at a given age with the experience of other Nepali women. Table 3 shows how many children a woman can be expected to bear on the average by the end of the age period. The similarity between Timling and the mountain region is again borne out in these figures. The final column presents a hypothetical cumulative experience for the average woman in Timling if the age-specific rates for the earliest five years were to match the mountain region rates. The resulting closer correspondance suggests that Timling's fertility is dampened relative to that of the mountain region at a time when age-specific rates are more susceptible to the affect of marriage rates. This will be returned to later.

Table 3: Cumulative fertility for Timling and selected Nepali populations.

Age	Timling ^a	Terai ^b	Hills ^b	Mtns. ^b	Timling [*]
15-19	.160	.815	.600	.450	.450
20-24	1.105	2.290	1.985	1.640	1.395
25-29	2.335	3.840	3.380	3.005	2.625
30-34	3.315	5.000	4.605	4.020	3.605
35-39	4.370	5.765	5.475	4.870	4.660
40-44	5.085	6.180	5.885	5.475	5.390
45-49	5.245	6.220	5.975	5.625	5.550

Sources: ^aTimling Marriage and Fertility History.

^bBanister and Thapa 1981.

* Assuming the same ASFR in the 15-19 group as in the mountain region.

Table 4: Average age at first and last birth and length of reproductive span for women 45+.

Age	1st Birth		Last Birth		Reproduc. Span	
	X	SD	X	SD	X	SD
45-49	22.85	2.97	38.69	7.16	15.85	7.97
50-54	22.91	3.83	40.00	4.29	17.09	2.51
55-59	24.86	1.78	36.71	6.08	11.86	10.24
60-64	21.78	2.33	38.78	7.23	17.00	7.60
65-69	23.25	2.82	40.38	5.29	17.13	6.56
70+	21.63	3.38	40.88	4.16	19.25	4.03
Total	22.82	2.92	39.27	5.79	16.45	6.82

Source: Timling Marriage and Fertility History.

Finally Table 4 presents average ages for the first and last births and average reproductive spans for the women of Timling who have completed their fertility experience. Once again, no obvious trend may be inferred although age at first birth is slightly later in the youngest cohort compared to the oldest.

The main point from these 56 reproductive histories is that there is no trend toward either higher or lower fertility over the 30+ years encompassed in these women's reproductive careers. The average number of births per woman is 5.25, a low number for a natural fertility population but one which invites comparison with the 5.63 births attributed to the average woman in the mountain region in the Nepal Fertility Survey. Age-specific fertility rates for these women also follow the expected pattern although their magnitude tends to be lower than those of other natural fertility populations. Most of the measures of fertility for women of completed fertility show a strong consistency that argues well for the quality of the Timling data.

Fertility performance over time: measures of period fertility

An alternative way of picturing Tamang fertility in Timling is to use reproductive histories to look at women's experience during different periods. This allows us to analyze fertility during the particular years or groups of years while forcing us to confront data reliability in other ways.

By checking the TFR for the five-year periods for which women occupy every age group, it is possible to gain a longer perspective on the data. The TFR for the 1957-61 period, an average of 6.35, effectively shatters the notion of a long trend toward increasing fertility. For the next five-year period, an average TFR of 5.05 suggests, if anything, a dominant pattern of a fertility peak at the end of decades with slightly lower fertility at the beginning.

Goldman, et. al. (1979) suggest that Nepal Fertility Survey data accuracy can be checked through the assumption of unchanging cumulative fertility in different cohorts. By establishing rates for the most recent period and comparing those of the other periods, the extent of omission in particular years can be determined. One major and reasonable assumption here is that events in the most recent period are more accurately reported because they are the least likely to be affected by loss of memory. This applies to errors of omission, which lower the TFR, as well as those of displacement, which can shift age-specific rates to higher and lower numbers in different age categories.

Table 5: Timling age-specific fertility rates for all women by period.

Age	Period							
	42-46	47-51	52-56	57-61	62-66	67-71	72-76	77-81
15-19	.000	.027	.014	.051	.022	.025	.022	.037
20-24	.303	.071	.164	.282	.172	.220	.138	.207
25-29	.212	.182	.286	.274	.155	.313	.330	.263
30-34	.211	.212	.182	.214	.178	.197	.232	.275
35-39	.412	.184	.173	.242	.258	.205	.197	.273
40-44		.176	.132	.154	.030	.143	.137	.141
45-49			.059	.053	.038	.030	.000	.027
TFR			5.05	6.35	4.27	5.67	5.28	6.12

Source: Timling Marriage and Fertility History.

Fertility measures for Timling have already been shown to fluctuate through time. A closer look at period age-specific rates should allow us to say more about how these changes work. Table 5 presents age-specific and total fertility rates for five-year periods in the past by age-group. Columns in this table present period rates while diagonal cells give cohort experience. If adjacent cells are compared horizontally, the experiences of different cohorts can be compared. Thus the same group of women who have an ASFR of .273 in 1977-81 when they were between 35-39 experienced an ASFR of .232 when they were five years younger.

Depending on our opening assumptions, these data permit a number of interpretations. While Goldman, et. al.'s assumption that the most current period will most accurately reflect actual fertility is reasonable, especially for the Nepal Fertility Survey data, it would force a strained interpretation of the Timling material. Following this assumption, one would expect rates to decline in the earlier years through the effects of omission. Since there is no such decline, we would have to conclude that the TFR for the 1957-61 period was even higher than the most recent period than it already is. Further, the more recent

periods would not be adjusted upward as much as the earlier ones, increasing the fluctuation in TFR's. The result would be an even more jagged picture than presently suggested by the data. Both the lack of clear trend together with a lengthy data collection period argues against strong memory bias effects.

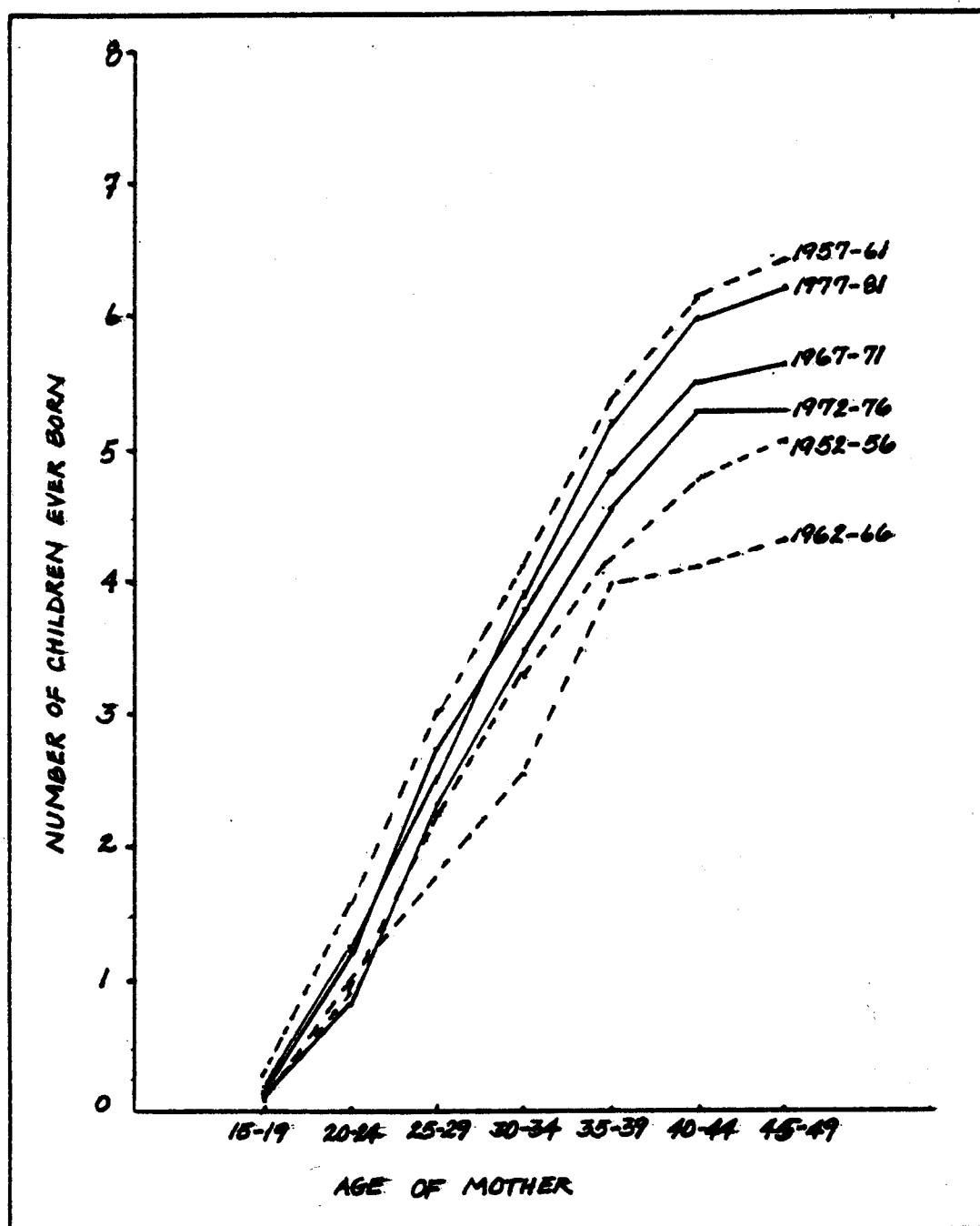


Figure 3: Cumulative fertility for 5 year periods--synthetic cohorts.

Figure 3 gives a graphic idea of the trends in total fertility rates throughout the five-year periods for which the data exists in all age groups. It clearly demonstrates the lack of patterned change in rates over five-year periods while also showing the general consistency in the timing of births over these same periods. Once again, the 1962-66 period is the most depressed in relation to the others. Although the shape of the graph for this period would be consistent with event displacement to the 35-39 year age group for reported births, the lack of any evidence for such displacement in other years coupled with a method of aging and placing events that should be largely free of age heaping point to some more specific cause for the pattern.

The 1962-66 column, like all others with a complete set of age groups represented, gives the experience of seven five-year cohorts of women. By comparing these rates with those on either side we are able to compare the experience of different cohorts as they pass through the same ages. Such a comparison reinforces the attempt to lay the cause of dampened fertility on factors specific to this period. Four of the seven cohorts experienced markedly reduced fertility for their age class during this period. If the age-specific fertility rates of women of completed fertility are taken as a yardstick, the rate for the 20-24 year old group during 1962-66 is .017 below the average; for the 25-29 year old group 0.91 lower; for the 30-34 year old group .018 lower; and for the 40-44 year old group .113 lower than the average. This would mean a total fertility of 1.20 children fewer than the average. That the reduced fertility during this period was not a function of lower fecundity levels is suggested by a return to near average rates for their age groups during the next period.

Returning to Table 5, no further trends are revealed. Each cohort experiences roughly similar rates at a particular age range, with some unpatterned fluctuation. The irregular patterns for period ASFR in more recent years are related to the smaller number of woman-years in the past. Where a total of 560 woman-years is represented in the 1977-81 column, the 1942-46 period includes only 182 woman-years. Not surprisingly, the earliest years on the record are the most open to the effects of random variation.

Figure 4 presents the mean age of childbearing in 1977-81, the most recent five-year period, along with the mean ages of childbearing for five-year cohorts of women between 25-49 years old at the time of the survey. The averages for age groups with incomplete fertility careers are based on the completed ranges up to the time of the survey and thereafter on synthetic rates from the last five-year period. For this reason, the youngest two cohorts are omitted since their schedules are most heavily influenced by the period rates, resulting in a mean age of childbearing equal to that of the 1977-81 period. If the timing of events were displaced toward the date of the survey, the mean age of childbearing for the older cohorts should be higher than the average for the last period. Since this is not the case and the variation in mean age is not large, the data once again suggest a high degree of consistency and little change through time.

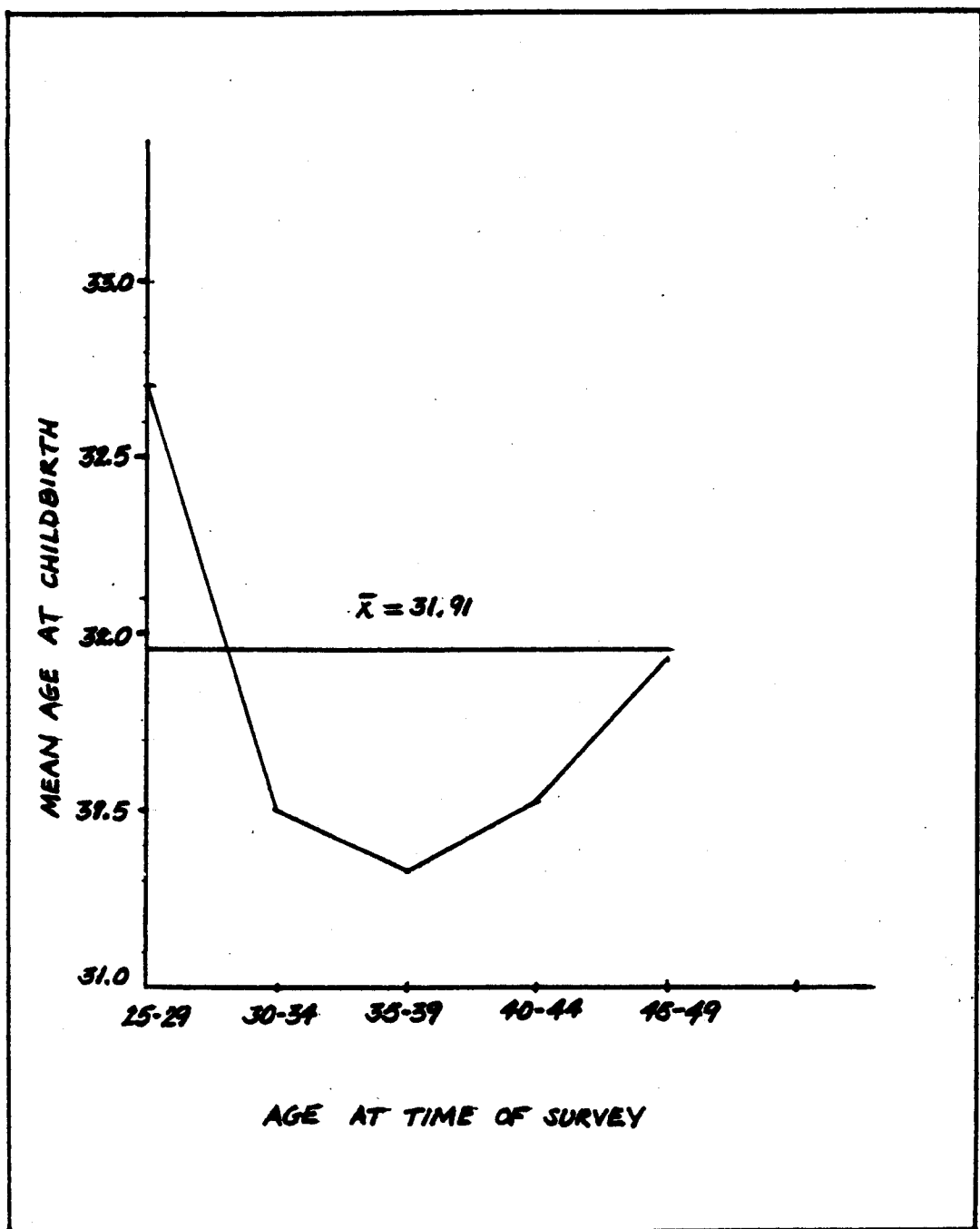


Figure 4: Mean age at childbearing for most recent 5 year period and for 5 year cohorts. Most recent cohorts based on synthetic rates (see text).

The crucial issue of changing rates seems to be answered with little evidence of any trend. Without this evidence, the small fluctuations that do occur can be explained as random fluctuations of the kind that we would expect to be most apparent in small populations such as Timling's. Thus the best indicator of the underlying fertility pattern in the village is the pooled experience of all women. Table 6 presents this information for 152 Tamang women who have ever been exposed to the risk of childbirth.

Table 6: Age-specific fertility rates for 152 Tamang women.

Age	Parity															Total	At Risk	ASFR
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
15-19	18	4	0	0	0	0	0	0	0	0	0	0	0	0	0	22	751	.029
20-24	78	43	10	3	1	1	1	1	0	0	0	0	0	0	0	138	702	.197
25-29	33	54	42	19	5	2	1	0	1	1	1	1	0	0	0	160	615	.260
30-34	5	15	24	28	23	8	4	2	0	0	0	0	1	0	0	110	530	.208
35-39	2	3	15	17	21	19	8	5	2	1	0	0	0	1	1	95	439	.216
40-44	0	1	2	6	9	9	9	5	5	1	0	0	0	0	0	47	330	.142
45-49	0	0	0	0	0	1	3	2	1	1	1	0	0	0	0	9	269	.033
Total woman-years.....															3636			
Total births.....															581			
TFR.....															5.43			

Source: Timling Marriage and Fertility History.

Finally, we arrive at a picture of fertility that will allow us to make generalizations about the effects of childbearing on other features of Timling's human ecology and to make comparisons with other populations. Timling's demographic history is characterized in this most recent period by a high degree of consistency across time despite expected random fluctuations in small populations. The average woman gives birth to just over five children in her reproductive career and the pattern of childbearing follows the general experience of natural fertility populations. By the time the average woman reaches age 25, she has borne at least one child and continues to have them at a high rate for the next 20 years. The 35 year reproductive period between 15-49 results in an average of 5.43 births per woman, but the years of highest fertility are between 20-39 when 4.36 of these children are born.

The causes for this particular pattern remain to be determined. An especially important feature is the low number of births that occur in the absence of contraception. The next section will deal with this problem in terms of Davis and Blake's framework (1956) and more recent statements about fertility determinants (Leridon 1977; Bongaarts 1975, 1978).

Proximate determinants of fertility in Timling

Faced with a total fertility rate of slightly over 5 children, a figure on the lower end of the range for natural fertility populations (cf. Leridon 1977: 106-110), our next task is to explain why fertility is expressed at this level. The crude birth rate for 1981 in Timling was 41 births per thousand people, while for the 1976-81 period it was about 37 (assuming a base population of 600 for every year of the period and that those births on the reproductive histories were the only ones to occur). These figures again suggest that Timling's fertility falls at the lowest end of the range for high fertility levels. Bongaarts (1975: 290-91) places the range of highest observed crude birth rates at from 40 to 50 per thousand and writes that populations at the upper end of this range have an almost complete absence of contraception and induced abortion while crude birth rates closer to 40 usually imply some form of birth control. Yet the people of Timling reported no use of birth control. The question we must ask ourselves is: why is the result of natural fertility so low among the Tamang ?

The biological limits of the reproductive span are usually taken to be the years from 15 to 49. But as Leridon notes:

...the total length of the reproductive life could be longer than 35 years, if we consider the interval between puberty and menopause; actually, however,...the fecund period is on the average 27-28 years, and in addition both the beginning and the end of fertility seem to be progressive processes (1977: 10-11).

The highest level of natural fertility within that period is reported for Hutterite women married between 1921-30. These women bore an average of 9.5 children each (Leridon 1977: 107). Even in Timling we have examples of women who have given birth from 10 to 15 times. As Bongaarts (1975: 289) writes, if one were to take the minimum interval between births as 9 months, a woman would theoretically bear as many as 40 births in her 30 reproductive years.

Clearly, the expression of fertility must be influenced by factors outside the simple 9 month gestation requirement. Given an average reproductive span of 30 years and a total of 5.43 births to the average Tamang woman, only 48.2 months or 13.4% of the reproductive period is spent in the pregnant state (cf. Bongaarts 1975: 294-295, where the states that women in typical natural fertility populations are pregnant for about 16.6% of their reproductive years).

The factors that reduce the hypothetical limit to a woman's fertility are both physiological and behavioural. First, certain biological requirements and probabilities limit the number of children a woman can actually bear. Interacting with these are a number of behavioural components that can either maximize or further reduce fertility.

For a complete discussion of the measures used to describe these variables the reader should refer to the original article by Bongaarts (see also Bongaarts 1975, 1976). The following discussion is confined to an application of the indices and measures to the Tamang and I will be able to make use of a much simpler version of the model. For example, Bongaarts has created measures to get at the effects of marriage, contraception, abortion, and lactational infecundability; since the Tamang report no use of contraception or abortion in Timling, we can simply ignore these variables.

The most important variable affecting fertility in a non-contracepting population is exposure to the risk of pregnancy. In practice, this is most easily determined by looking at the number of women married at each age of the reproductive period. Thus exposure is a function of (a) age at marriage, (b) age at cohabitation, and (c) separation due to divorce or death of husband. Bongaarts' measures subsume all of these affects into one index which he calls the index of proportion married (C_m). This is calculated as the weighted mean of the age-specific proportions married. Weights are given by the age-specific marital fertility rates (Bongaarts 1978: 109).

We have seen that fecundability changes with a woman's age. It follows that non-exposure to the risk of pregnancy will have a different impact on a woman's final fertility experience depending on the ages at which she is not exposed. The index of proportion married simply takes account of this differential and gives us the proportional reduction in fertility due to exposure factors by themselves.

Some features of Tamang society and culture must cause us to modify the meaning of this index. At one end, the index assumes that marriage marks the beginning of sexual intercourse while a related assumption is that a woman does not engage in sexual relations in the absence of her spouse. These assumptions break down somewhat when applied to the Tamang. First, premarital sex, while not actively encouraged by Tamang parents, is not severely disapproved of and is even expected. Boys and girls have frequent opportunities to get together during all-night shaman rituals or during dances near the Gompo. Here, a boy and girl will silently drop out of the circle of dancers to slip into the trees surrounding the Gompo and stone mane. Their friends will continue to dance and sing and make amused comments about their whereabouts for the half hour or so they are gone.

Likewise, spouses are frequently separated at other times during their married lives and I am aware of at least two cases in which children were conceived when the women's husbands were at least two or three week treks from Timling. In one of these cases, the husband returned to find that he had a new son, an event that he quietly and happily accepted. The other case involved a more complicated settlement, but the problems did not revolve around the woman's infidelity.

Nevertheless, while premarital intercourse is condoned, pregnancy nearly always leads to a swift marriage with the child's father or some other agreeable male. The Tamang place great stress on knowing a person's clan membership and this can be determined only through the father. Very strong pressure is brought on a pregnant unmarried girl to name the father of a child. Subsequent pressure on the father almost guarantees marriage or support.

I have used the experience of all Tamang women to calculate the Bongaarts measures since it includes the greatest range of data and should be the best reflection of the typical village pattern. Table 7

Table 7: Age-specific fertility, age-specific marital fertility and woman-years of exposure for all Tamang women.

	Age Group						
	15-19	20-24	25-29	30-34	35-39	40-44	45-49
ASFR	.029	.197	.260	.208	.216	.142	.033
ASMFR	.144	.301	.295	.222	.236	.163	.046
<u>Woman-years</u>							
Total	751	702	615	530	439	330	269
Exposed	153	458	542	496	402	288	196
Exposed/Total	.204	.652	.881	.936	.916	.873	.729

Source: Timling Marriage and Fertility History.

provides a summary of the relevant fertility measures by age for all woman years in the reproductive period and for exposed woman years only. Other information for calculating the index of proportion married is also given. We can see from the figures for age-specific fertility and age-specific marital fertility how greatly exposure can affect a woman's childbearing. These figures also indicate that marriage behaviour in Timling has the effect of moving the peak reproductive rates from the biologically most fecund 20-24 year period to the next, slightly less fecund, period. Looking again at Fig. 2 we can see that the much lower ASFR for the 20-24 year age group in Timling compared to the Terai and Middle Hills regions would disappear were it not for the exposure effects of marriage practices.

Fig. 5 gives a more graphic presentation of these exposure effects. The gap between lines for age-specific marital fertility and age-specific fertility show that the most dramatic exposure effects occur in the first ten years of the reproductive period. Were all women exposed to the risk of pregnancy throughout these years some 1095 additional children would be born per thousand women in those years. Far smaller exposure effects are felt in the last 25 years when only 515 additional births per thousand women would occur. A breakdown of Bongaarts' index will make this more obvious.

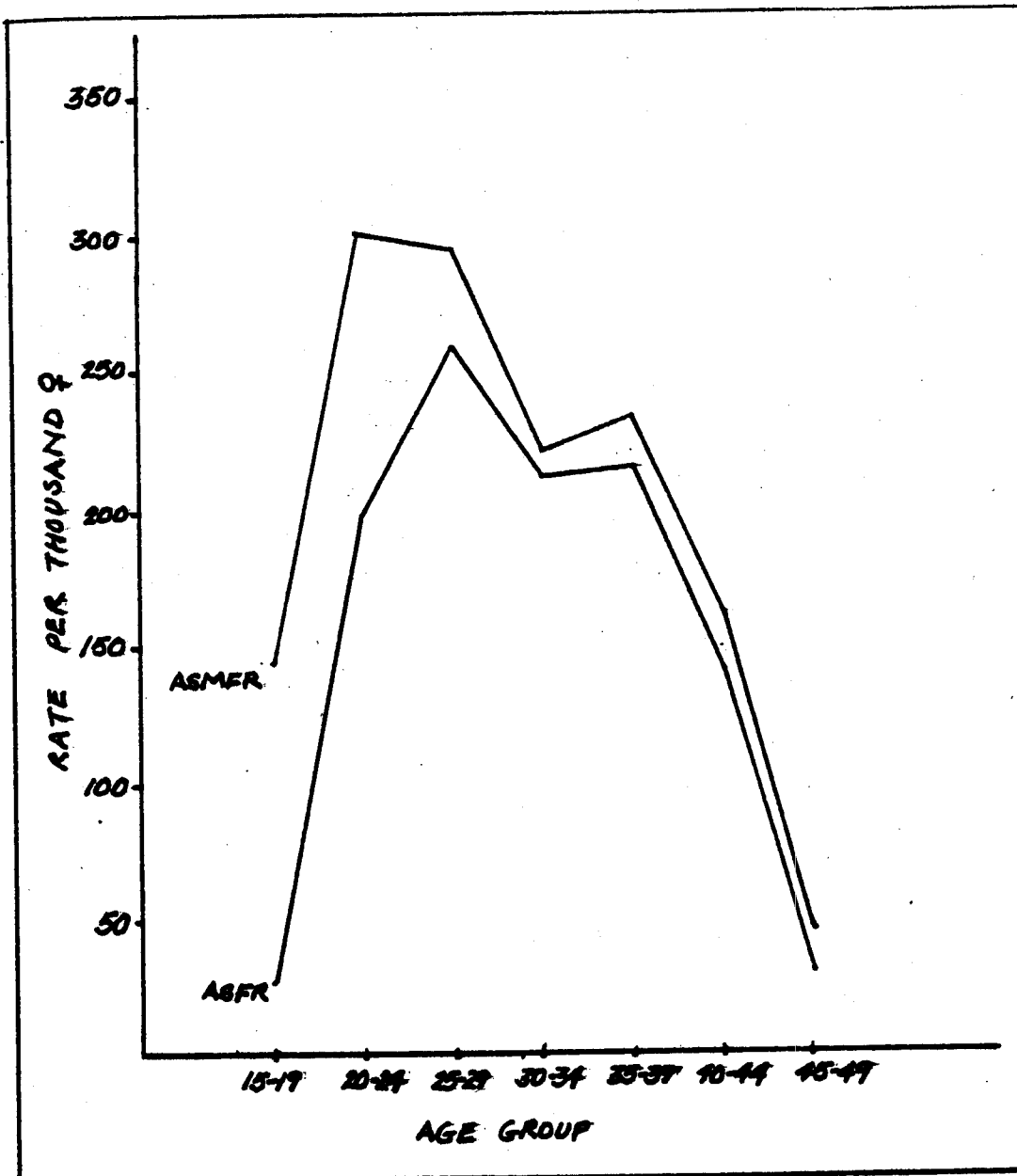


Figure 5: Age-specific fertility and age-specific marital fertility for 152 Tamang women.

The index of proportion married is easily computed from the information in Table 7. We simply multiply the proportion of exposed to total woman years in each age class by the corresponding ASMFR and divide these by the sum of the ASMFR alone. The resulting proportion, .771, tells us that average fertility is reduced 22.9% because Tamang women are not exposed during parts of their fecund period. For these women of completed fertility, this translates into the difference between having an average of 5.43 births and an average of 7.04 births per woman. Because I have used the age at cohabitation rather than the age at marriage, the interpretation is slightly different than straightforward "marriage" effects, but it is more accurate given the possibility of delaying actual cohabitation after arranged marriages.

A further breakdown distinguishes between the effects of age at cohabitation and of separation from spouse due to his death.⁵ Table 8 presents the woman-years of exposure that would result using three assumptions.

Table 8: Years of exposure and proportions of total woman-years exposed under differing assumptions about marriage and death.

	Age Group						
	15-19	20-24	25-29	30-34	35-39	40-44	45-49
<u>Woman-years</u>							
Total	751	702	615	530	439	330	269
Assumption 1	168	512	557	498	433	325	264
Assumption 2	751	698	597	522	424	310	196
Assumption 3	751	680	570	481	399	276	178
<u>Ratios</u>							
1/Total	.224	.729	.906	.940	.986	.985	.981
2/Total	1.000	.994	.971	.985	.966	.939	.729
3/Total	1.000	.969	.927	.908	.908	.836	.662

Source: Timling Marriage and Fertility History.

In the first assumption, I take the given age pattern of cohabitation and ignore the deaths of husbands. The second assumption does the reverse and takes it that all women are married at the beginning of the reproductive period with unexposed years resulting from the given pattern of widowhood and remarriage. I have included a third assumption to discover the kind of pattern that would result were the Tamang to marry at the beginning of the reproductive years and not practice widow remarriage. A glance at the proportions of years exposed to the risk of

pregnancy under the different assumptions suggests that the pattern of cohabitation has the greatest impact on fertility; this is borne out when we calculate Bongaarts' index of proportion married following the same procedure as above. When we assume that exposure is affected only by the age at cohabitation, we get an index of .829. The first mortality assumption produces an index of .969. Even when we assume the current pattern of mortality without widow remarriage, this is only slightly reduced with an index of .922. Thus the exposure effects of Tamang marriage and cohabitation patterns are to reduce potential fertility almost 20%, while the effects of widowhood and remarriage reduce it an additional 3%

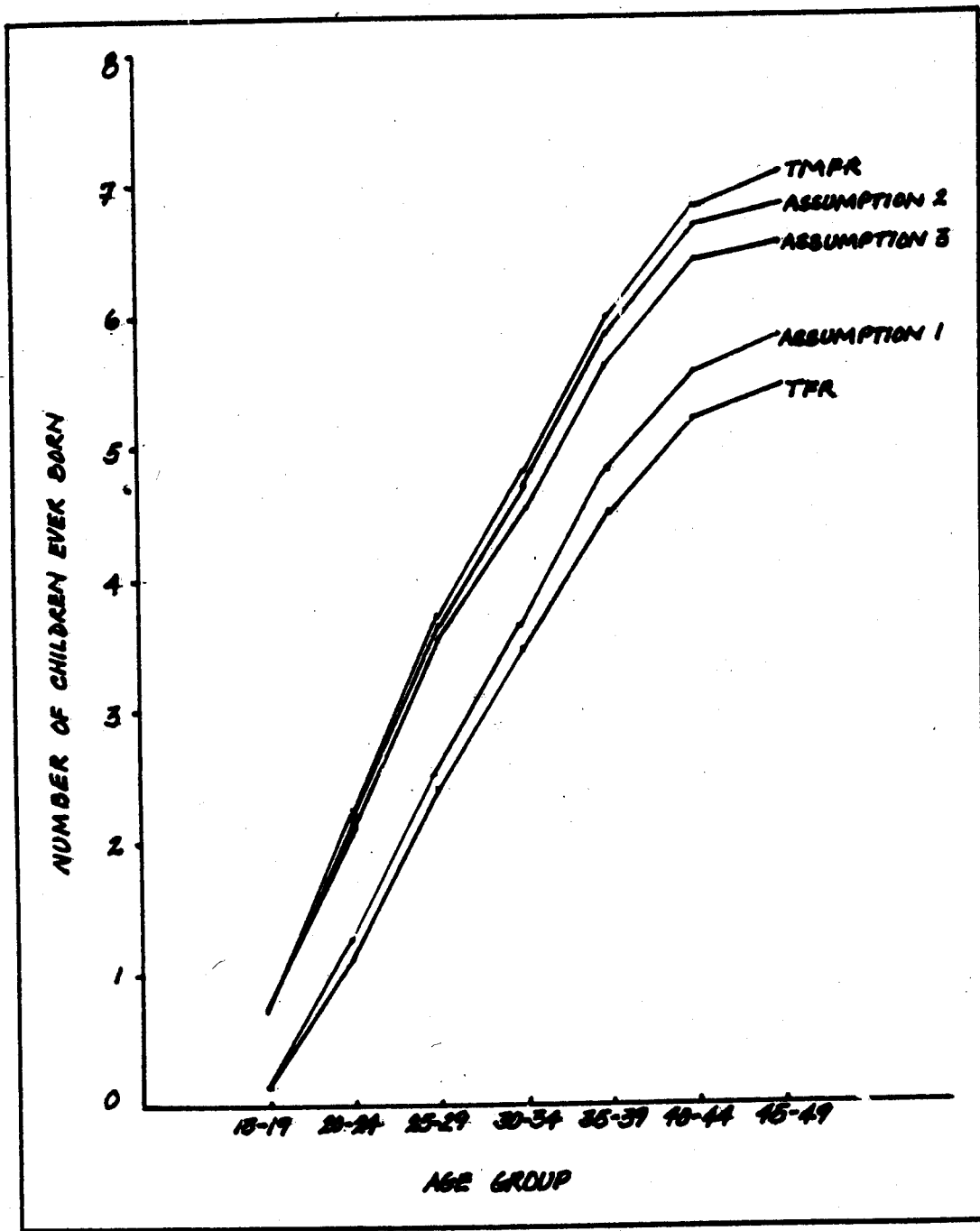


Figure 6: Cumulative fertility for 152 Tamang women under different exposure assumptions.

Fig. 6 shows the childbearing experience of the average Tamang woman given the different assumptions. The top line shows how many children would be born per woman were she exposed throughout the reproductive years; the bottom line traces the actual course of fertility in Timling. The total number of births per woman demonstrates the large fertility dampening effects of exposure variables:

Total Marital Fertility	7.0 births
Widowhood with remarriage	6.8 births
Widowhood, no remarriage	6.5 births
Cohabitation affects alone	5.8 births
Actual fertility	5.4 births

While these exposure factors reveal some of the reasons why Tamang fertility is so low, the total is still vastly less than the potential for natural fertility populations. Yet no woman in Timling reported contraceptive use or resource to abortion. Even if some women concealed abortions in their past, we can be confident that the fertility dampening affects would be trivial since the only reason to abort would be to escape the consequences of premarital pregnancy. Tamang attitudes toward premarital sex and pregnancy are not especially oppressive. For this reason there is no need to consider the Bongaarts index of non-contraception or his discussion of abortion affects.

The next major index that Bongaarts has developed is the index of lactational infecundability (1978: 116). Because detailed data on breastfeeding were not gathered, my use of this index must rely more heavily on the assumptions of the Bongaarts model than in the discussion above. This is not a strong blow to the discussion, however, since the model incorporates the typical effects of fertility dampening variables from known populations. Having discussed the impact of known exposure variables on fertility, the remaining intermediate variables include the effect of (1) the infecundable period immediately following a birth, (2) waiting time to conception, (3) time added by intrauterine mortality, and (4) the nine month gestation period (Bongaarts 1978: 115). In the absence of breastfeeding, the time added by these factors is 1.5, 7.5, 2 and 9 months respectively, for a total of 20 months. Bongaarts' model simply assumes that any additional time in the infecundable period is a function of breastfeeding. The index of lactational infecundability (C_i) is the ratio of this minimal 20 month interval to the same period plus additional time in the infecund state. We assume, then, the length of the infecund period to be the only changeable factor on the average. The index of lactational infecundability then tells us to what extent fertility is dampened by breastfeeding behaviour.

Tamang breastfeeding practices are consistent with those found in other less developed countries (Bongaarts 1978: 116). That is, the breastfeeding period is much longer than that of most industrialized

settings. The Tamang themselves feel that it is proper to breastfeed a child until the next pregnancy and I have observed children as old as 5 and 6 taking their mother's breast. Women generally reported that they nursed their children for at least three years or until the next birth. Children are nursed on demand, even after solid food is introduced into their diet in the form of pre-masticated grain at the age of about 6 months. Thus we would expect a long period of lactational infecundability.

Figuring for the Tamang case, then, we need only to work backward from the Bongaarts estimate of the interval between births: 3.38 years for all closed intervals. Subtracting the invariant times added by waiting time to conception, intrauterine mortality, and the gestation period we then arrive at a mean duration of lactational infecundability of 22 months.⁶ In spite of the problems of small sample size and the crude estimate of months in the birth interval that we get by converting years into months, the mean duration is amazingly close to that observed in Bangladesh (18.9 months) where very similar breastfeeding practices prevail (Bongaarts 1978: 116). The index of lactational infecundability for the Tamang works out to .493, indicating that breastfeeding reduces fertility to about half of what it would be in the absence of breastfeeding. Thus the total fecundity rate, defined as maximum fertility in the absence of these dampening factors is equal to the total natural marital fertility rate divided by the index ($7.0/.49$), or 14.3 births per woman.

We can conclude that the lower natural fertility estimates reported by this survey can be explained by age and rate of cohabitation, lessened exposure due to separation, and periods of infecundability due to lengthy breastfeeding practices. Timling's population has not been faced with the conscious need to limit births up to the present time since there has been no compelling limitation in the amount of new land left open. The fertility level is the unreflected consequence of behaviour not specifically directed toward fertility control. Indeed, Tamang women report a desire for as many children as possible, yet they reduce their potential childbearing by more than one birth through marriage and cohabitation effects alone. Caldwell's point about pre-transition societies being "seamless" (1976: 343) has some indirect support here. One indication of a breakdown in the supports for high fertility would be consciously relating intermediate variables to the number of children born and then directing behaviour to control that number.

Conclusions and implications

Taken by itself, this analysis indicates that methodologies designed for application to much larger data sets can be effectively used for community level analysis. A number of advantages are obvious. First, once the absence of major trends in fertility behaviour can be established analyses based on the experience of all women dramatically increases the woman-years on which we can base are discussions of vital rates. One of the severest problems community-level analysis faces is the problem of random fluctuation in small samples. Further, typical

summary statistics for completed fertility are based on the experience of women beyond the reproductive years. This is often the least well represented group in an already small population; furthermore, it is the most subject to the effects of memory bias. Analysis that pools the experience of all women greatly enhances the reliability of estimates and permits higher confidence in inter-community comparisons.

Second, the detailed examination of age-specific events allows for a processual description of fertility. Events are more easily related to other processes in the individual lifecourse, the household developmental cycle, and the expansion of kin networks. For example, a processual look at childbirth in the household can allow us to relate the different ages of children to parents throughout the lifecourse to discuss changing household composition and its implications for household labour requirements and links to other households. This type of analysis is essential for a dynamic explication of typical family processes at the community level.

Third, the application of Bongaarts' methods for measuring the affect of proximate fertility determinants allows us to quantify these impacts and provides summary measures for comparison between communities. The extent of fertility variation between communities is obvious from even a cursory look at published reports. Completed fertility based on reports for women beyond the childbearing period vary from 4.7 reported for a Bhotiya population (Schuler 1981: 91-92) to 6.6 for another such population in Northwest Nepal (Levine 1982: 7). Goldstein, et. al. (1983: 40-41) provide a summary table for the range of completed fertility in Himalayan community studies. Their suggestion that hypoxic effects do not explain the variation in these figures may be examined in more detail with a comparison based on Bongaarts' measures.

This relates to the importance of institutional analyses of fertility determinants in Nepal. With over 20% of potential fertility in Timling dampened by marriage and cohabitation effects alone, there is strong support for investigation of the roles and status of women and the functions of marriage as part of our understanding of community demography. In populations lying at the determined (Nardi 1981) end of the fertility spectrum, childbirth is related to a variety of other goals (Lesthaeghe 1980).

A programme for new research is called for that focusses on the collection of detailed demographic data in addition to important institutional and cultural information. March (1984) has suggested that symbolic representations of women that ramify through Tamang society stress their exchange and binding roles. We need to relate these values to marriage behaviour and subsequent fertility. Comparisons are called for with standardized data sets across ethnic groups in Nepal. In addition, these measures can be used to compare communities populated by the same ethnic groups. Timling's low fertility in relation to rates for the whole of Nepal and the high variation between communities for which data now exist suggests that community studies need to be carried

out in the whole range of regions, both for a full understanding of the supports for high fertility and in order to relate population policy to the real complexity in Nepal.

NOTES

1. Fieldwork in Timling was carried out in 1981 with funding from a Fulbright-Hays Dissertation Research Abroad Fellowship. Tselthapa Tamang and Lama Mingmar Ghale assisted in data collection for this project. This analysis has benefitted from the comments of Fred Arnold, Dilli Ram Dahal, Deborah Freedman, Robert Jones, Doris Slesinger, and Christine Stier, none of whom are responsible for errors in it.
2. Toffin (1976) provides a general description of ethnic groups found in the upper Ankhu Khola region. See Fricke (1984) for a more complete description of Timling's population.
3. Compare this to the Gurung of Thak with 39.6% below this age (Macfarlane 1976: 292) and the Dhangaba of Northwest Nepal with 45% (Ross 1981: 37). Other analysis indicates that Timling's implied rate of natural increase is 1.2% annually (Fricke 1984: 299) compared to the 2.1% rate for Nepal as a whole (Banister and Thapa 1981: 25). This is consistent with a doubling time of about 60 years for Timling's population.
4. A complete discussion of methods and questionnaires may be found in Fricke (1984).
5. We could do the same for separation due to divorce, too, but only three divorces occurred in this group. In one case, the woman remarried in the same year. In the other two cases, the women divorced their husbands before cohabiting with them; these effects are thus included in the age at first cohabitation.
6. That is: 40.55 months - 7.5 months - 2 months - 9 months = 22.05 months.

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Archaeological Remains of Lumbini:
The Birth-place of Lord Buddha

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Historical Precude

Lumbini, the birth-place of Lord Buddha, has the distinction of being the foremost site of religious pilgrimage of the Buddhists of the whole world. Lord Buddha took his birth at this place under the Sala tree from the right arm-pit of Queen Mayadevi, the wife of King Suddhodhana of the Shakya Republic of Kapilvastu, on the day of the full-moon of the month of Vaisakha (April-May) in 563 B.C. (Pradhan n.d.: 98-100). A pond, where the queen bathed before giving birth to the Lord, existed there since a long time and two fountains of cold and hot water and a river of oil also flowed there at the time of his birth for providing cold and hot water bath and oil bath to him (Fuhrer 1972: pp. 26-29). The Mahaparinivana Sutta reveals that at the time of Mahaparinirvana of the Tathagata when Ananda asked him about the future of his religion and followers, he eloquently spoke about the purity and contemplative virtue of the Lumbini Garden and advised his faithful followers and ordinary devotees to visit Lumbini along with the holy sites of Bodhagaya, Saranath and Kushinagar (Rijal 1979: 30-32). Thus after the Mahaparinirvana of the Buddha, the Buddhist pilgrims began to come and pay their homage to the holy spot of nativity for acquiring virtues. After the beginning of the tradition of making stupas, a few stupas were built by the adherents of Lord Buddha at Lumbini also.

Authentic history of the Lumbini Garden begins with the erection of the Chunar sandstone inscription by King Asoka when he visited the site on the direction of Mahasthavira Upagupta in 250 B.C. At the time of this visit, Asoka presented one thousand gold coins (suvarnas) to the people of the country, raised (or enlarged) a stupa at the spot of nativity of the Lord and erected the pillar which contains the words "Here the worshipful was born", which were uttered to him by Mahasthavira Upagupta, his teacher (Pradhan n.d.: 30-32). A brick railing was also erected at a distance of 1'-6" from the base of the pillar for its protection, and it had dentils also (Mukherji 1969: 35). As the monks had begun to come to Lumbini, monasteries must have been built there by the patrons of Buddhism for providing accommodation to the monks who lived there and the pilgrims who visited the site. A large number of Mauryan and Shunga-Kushana terracottas and stone heads of the Mathura School discovered here reveal that after the visit of Asoka pilgrims from Northern India frequently began to visit the site, offer prayers to the nativity spot of the Tathagata and dedicate the images which they brought with them as tributes (Mittra 1972: 196-205, pls. CXVII-CXXX).

Fa-hien and Huien Tsaing were two noted Chinese pilgrims who visited the Lumbini Garden respectively in 403 and 636 A.D. Fa-hien could see nothing at Lumbini except the holy tree under which the Buddha took his birth, the Shakya Tank where Queen Mayadevi bathed before giving birth to the prince and a well from which people fetched water for drinking (Pradhan n.d. 19-26). However, Huien Tsaing records that he saw the Sacred Tank, a stupa about twenty-four paces to the south of the spot of nativity where Indra had received the baby in his arms, four stupas in its vicinity, where the four heavenly kings had taken charge of the baby and the stone pillar with the figure of a horse on its top which was installed there by King Asoka besides the Tilar Nadi-the river of oil, which gushed there at the time of the birth of the Buddha for his oil-bath (Pradhan n.d.: 19-26). The remains of a few monasteries and the extent ceramic and art-remains of the site show that from the sixth-fifth centuries B.C. till the thirteenth-fourteenth centuries A.D., Lumbini was a prominent centre of Buddhist pilgrimage. The kings and dynasties which ruled this region also seemed to have provided their moral and material support for the effulgence of the site. In 1314 A.D. Ripumalla, a king of the Solar Dynasty (Adityavamsa) of Western Nepal, also visited this site (Pradhan n.d.: 29). As he happened to be a Buddhist, he must have worshipped the holy spot of nativity and facilitated the monks who lived there in the adoration of its sacred stupas and idols.

Bhuvan Lal Pradhan has written that Sikandar Lodi (1484-1517 A.D.) was religiously bigoted and from the beginning of his rule he destroyed the religious sites of Northern India. Lumbini, the sacred site of the birth-place of Lord Buddha, had a great set-back after the beginning of the rule of the Muslims and finally it got lost in obscurity till the first-half of the nineteenth century A.D. The policies of the Later Mughals such as Aurangzeb and the local Rajput kings of the region also contributed some laurels in the decay and extinction of the Lumbini Garden (pp. 30-32).

Discovery of the Lumbini Garden

After the beginning of the rule of the British over India, scholars such as James Princep and Alexander Cunningham greatly contributed to the efflorescence of the Indian history and culture by deciphering the Asokan Brahmi script and publication of the book called The Ancient Geography of India. The study of the early Buddhist works by the scholars revealed that Kapilvastu and Lumbini were located at the foot-hills of the Himalayas. Thus in 1896 Dr. Fuhrer was sent to explore the archaeological potentialities of the Tarai of Nepal lying parallel to the northern boundary of the Basti district of the United Province. The same year he discovered Lumbini with the help of General Khadga Shamsher Rana of Nepal. In his exploration report Fuhrer says that he found the Asokan pillar containing the inscription describing the birth of the Buddha at the site and the sculpture of Mayadevi which was discovered in the ruins of the stupa built in the neighbourhood of the pillar. He has written that he saw four ruined stupas close to the edict-pillar besides the remains of four other stupas, mentioned by Huien Tsiang in his accounts.

Fuhrer has given the accounts of the Shakya Tank and two fountains which have been so eloquently described by the Chinese pilgrims in their travel-accounts (Fuhrer 1972: 26-29):

The discovery of Fuhrer was quite fascinating and therefore in 1899 Babu P.C. Kukharji was sent to the Tarai of Nepal with a special note from Vincent A. Smith, on behalf of the Government of India, to explore and excavate the archaeological remains of the Lumbini Garden and Kapilavastu. Accordingly, Mukherji excavated several monuments in the region and identified the ruins of Tilaurakot in the suburb of Taulihawa Bazar with Kapilavastu, the capital city of the Shakyas. (Mukherji 1969: 18-25, 48-57). The main discoveries of his archaeological activities at Lumbini are the details of the plinth of the Mayadevi temple on which lies the nativity sculpture of Lord Buddha, the remains of the brick-railing around the Asokan pillar, the bathing ghata (Shakya Tank) and the remains of five stupas along with the remains of a few structures belonging to the monasteries which graced that site during its hey-days (Mukherji 1969: 34-39). During 1933-39 Keshar Shamsher J.B.R. extensively excavated the ruins of the Lumbini Garden. However, he did not publish any report of his discoveries made at this site. Keshar Shamsher is credited for having provided a high platform around the Mayadevi temple, enlarging the Shakya Tank with successive terraces and brick veneer and building some rest-houses for the stay-facilities to the pilgrims (Rijal 1979: 15-16). In 1960 Mrs. D. Mitra of the Archaeological Survey of India excavated a small trench at the base of the Asokan pillar on the western side in order to ascertain the nature of the brick-enclosure described by Babu P.C. Mukherji and to know the details of the base of the pillar. She has given an exhaustive account of the sculptures and other kinds of remains which were discovered from the site in the past (1972: 196-205, Pls. CXVII-CXXX).

Recent Archaeological Activities

Scientific excavation started at Lumbini under the aegis of the Department of Archaeology, HMG, since the winter of 1970-71 alone. Main aim of this excavation was to locate the village of Lumbini mentioned in the pillar of Asoka. The cuttings around the old guest-house, located on the southern side of the Mayadevi temple complex revealed the structures of a few monasteries of four cultural period and ten successive layers of human occupation beginning from the sixth century B.C. Traces of a mud-wall, a terracotta ring, a circular burial containing the portion of the human skull, one iron sickle, bones of the birds and animals kept in a large number of pots and a terracotta plaque mould of Lord Buddha in the earth-touching posture belonging to the Gupta period were some important discoveries besides the huge amount of sherds of the Northern Black Polished Ware in the lower levels and red ware sherds in the upper stratum (Rijal 1975-77: 28-37, Pls. 1-6).

Following the call made by U Thant in 1970 for the development of the Lumbini Garden and preparation of the architectural master-plan of the site by Professor Kenzo Tange in 1972, the task of developing Lumbini Garden has been entrusted since 1975 to the Lumbini Development Committee

(HMG Lumbini Development Committee 1978: 5-19). From 1975 to 1980 every year Mr. B.K. Rijal of the Department of Archaeology excavated the site under the aegis of this committee. His excavations have brought to light the cultural sequence of the site beginning from the N.B.P. period in the vicinity of the Mayadevi temple including the remains of a brick structure of 15'4" X 12'-5" size of the pre-Mauryan period on the north of the Asokan pillar. The votive stupa which gave the lid of the gold-casket is an important discovery of Mr. Rijal. The other important discoveries of Mr. Rijal are the fragments of the Chunar sandstone horse-capital which Huien Tsiang saw and reported in the seventh century A.D. and the terracotta plaque with the Dharmachakra as well as a few terracotta human heads of the Gupta period. The terracotta sculpture of the Bodhisttva, which is also of the Gupta period, is another important discovery of the site besides a large number of spouted jars deposited at the bottom of a well (n.d.: 7-16). The excavations revealed a large number of N.B.P. sherds belonging to the types discovered at Tilaurakot in Period I and Hastinapur in the periods IIInd and IVth. They are mostly wheel-turned and are the fragments of bowls, small basins, vases, handis, lids, tumber-like pots and ghatas (Mitra 1972: 204-205). Mr. Rijal excavated a few monasteries also on the south and south-east of the Mayadevi temple which belong to the Shunga-Kushana and Gupta periods (Rijal 1975-77: 32).

The archaeological remains of the site have been studied here under the captions of architectural remains, sculptures and miscellaneous objects of the site for convenience.

Architectural Remains

Building activities started at Lumbini soon after the mahaparinirvana of the Buddha in the fifth century B.C. The earliest structure of the site so far discovered is one which was exposed on the north-western corner of the Mayadevi temple by Mr. B.K. Rijal. Located about 300 feet on the north of the Asokan pillar, it is 15'-4" X 12'-5" on plan, discovered 2 feet below the courses of burnt bricks of 17" X 8" X 5" size. The texture of the bricks is rough and in their preparation much husk and straw have been used. The structure is sealed by the Mauryan brick-bats which were properly rammed up to make the floor. The N.B.P. ware and degenerate grey ware sherds discovered associated with the structure show that it is a pre-Mauryan structure and most probably belongs to the fifth century B.C. (Rijal 1975-77: 32).

Because the Buddha had forbidden his followers to adore his image, after his death stupas came to be built to denote his existence at the places of his activities during his life-time, or at the places of his worship. This concept led his followers living at the Lumbini Garden to make a stupa at the spot of nativity in the fifth century B.C. which was later on enlarged by Asoka at the time he visited the site in 250 B.C. This nativity stupa is nowadays buried under the exquisite plinth of the brick temple which was built there long before the visit of the site by the Chinese pilgrim Huien Tsiang in the seventh century A.D. and excavated by P.C. Mukherji in 1899. Mukherji's report reveals that the temple was of curvilinear style and sapta-ratha design on plan. It was

a beautiful temple, with a 12 x 10 feet sanctum at the rear back showing six flights of steps provided from the east, beginning from the gate, a vestibule and a mahamandapa on the east opened by gates from the sides of north and east. The total length and width of the temple was 48 x 30 feet respectively. On the west in the sanctum a raised plinth of 3 x 1 feet contained the nativity sculpture which is even today worshipped by the pilgrims of the site. Four successive phases of constructions were noticed by Mukherji in course of his excavation. The wall in the lowest portion was plain, four bricks high, on which two courses receded by about an inch, which again went by a bent in vertical line. Then a neck appeared in a single course and on it a band of ornaments in two courses of bricks, carved in circular designs were put by the architects. Above this was the floriated cyma (padma) standing on a fillet in single course. There was another neck and on it which supported a course which was decorated with the design of heads. On this was the course of big cyma which occupied the middle of the plinth-wall. This cyma was surmounted with a course of beads and on that was placed the third neck (gala). Then a big band projected about 2 inches; it was carved out with wavy floriation and other decorations and finally crowned with a cyma, carved with the design of the lotus-petals. Lastly the fourth gala (neck) makes its appearance in a hollow line, on which was placed an ornamental dasa and a kumbha, the torus of the Greek architecture, done in two courses. Then again a cyma was ornamented with the lotus petals. The plinth, about 5 feet high, was finally finished up with a course of bricks carved with the lines of squares and little holes (Mukherji 1969: 36-37, Pandey 1968: 65-66). Mukherji suspected the remains of the older shrine below this plinth. The present author feels that the remains of the stupa which Asoka built or enlarged there in 250 B.C. are buried below this plinth, 'considerably down', as Mukherji calculated it. The general details of the plinth indicate that last time the temple was built in the fifth century A.D. after the visit of Fa-hien and before the visit of the site by Huiien Tsiang in the seventh century A.D., and at that time the nativity sculpture, which existed there since a longtime, was installed in the sanctum on the raised platform for the worship by the devotees. Attached to the temple of Mayadevi was the ante-chamber which housed the sculpture of so-called Vajra-varahi (Pandey 1980: 17). Rijal also exposed this plinth on the eastern side, however he has not given any detail of the exposed wall in his report. The author of this paper also visited the site at the time this plinth was exposed by him and noted the same features which Mukherji has furnished in his report. Mukherji found that the temple of Mayadevi was linked up with the Shakya Tank by a causeway having flight of steps of baked bricks (Mukherji 1969: 34-39). The people who wanted to worship the nativity sculpture inside the temple, first took bath in this tank and then went to the temple for their prayers and offerings.

Several stupas were built by the adherents in the periphery of this temple. One of them was located 16 feet on the north of the Mayadevi temple. In the vicinity of the ruined foundation of this stupa Mukherji found several sculptures of ancient and early-medieval periods. On the west of this stupa was another stupa. It was small in size and its foundation on the north-west was much broken. Its basement was square, "having rectangular projections in the middle of the sides and rising in regular

gradations of courses in rather plain mouldings" (Mukherji 1969: 34-39). Mukherji has given description of some more stupas which he excavated there, and a few of them were of round form. In the vicinity of the tank Mukherji excavated five stupas. The southern wall of the basement of these stupas showed batter (1969: 34-39). Five feet to the north of the Mayadevi temple Rijal excavated a square-based stupa of the Mauryan period. He is of the opinion that this stupa was "cut from the top upto the depth of 3'-0" x 2'-8" possibly during the operation of 1933-39 A.D." by Keshar Shamsher J.B. Rana. On excavation the floor of this stupa provided the lid-portion of a gold casket of cylindrical type in association with some charred human bones and other ritual offerings (Rijal 1975-77: 32 Pl. 4 'B'). The container part of the relic-casket seems to have been broken into pieces and removed by Keshar Shamsher Rana himself. This was the reason why the relics of the casket scattered on the floor. When the upper portion of the stupa fell down, it was incased during the Kushana period by the builders. In all 33 courses of bricks of this stupa are available today (Rijal 1975-77: 37). There are two more votive stupas on the north of the Mayadevi temple and they also belong to the Maurya and Shunga-Kushana periods (Rijal 1975-77:35). On the north-east of the Mayadevi temple 16 stupas have been found built on a platform. They are attributed to 16 Arhats (Rijal 1975-77: 35, Pl. II). All these stupas have been beautifully conserved now.

A few monasteries were also built at Lumbini. One of them, located on the south-east of the Shakyas Tank, was of quadrangular shape and had cells on four sides of the courtyard. The partition walls of the cells are reduced to a few courses only. At places the floors of the cells are visible and at other places they have been removed by the builders of the later phase (Rijal 1975-77: 32, Fig. 2). The large bricks (35.5 x 20.3 cm) of the monastery reveal that it was initially built during the Mauryan period, perhaps at the time of the visit of the site by King Asoka. On the ruins of this monastery are the scanty traces of a structure representing possibly a latter monastery. A well was also excavated here. It was used by the monks living in the monastery for the purpose of drinking water. There are the ruins of some more monasteries on the northern side of these monasteries. However, they are in complete ruins and it is difficult to ascertain their features and dates of their constructions today. However, they seem to be the structures of the Shunga-Kushana and Gupta or Vardhana periods.

Mukherji excavated a brick-railing around the Asokan pillar which showed three phases of constructions; the earliest (5'-6" high) exhibiting very large bricks, most ancient in style. The middle portion of the wall was 2'-8" high and it belonged to the subsequent period. Mukherji noticed dentils also in between the constructions of the first and second periods (Mukherji 1969: 35). In 1960 Mrs. D. Mitra excavated a narrow trench on the north side of the Asokan pillar to check the nature of the enclosure-wall described by Babu P.C. Mukherji. She is of the opinion that owing to the disturbances caused by the excavations of Keshar Shamsher the brick-railing no longer exists on the western side of the pillar (1972: 197-98). Mitra has written that on the immediate north-east and south-west of the

pillar there were small brick stupas with a square base while its south-western portion was marked with a triratha brick-plinth. Mitra provides much later date to these structures (1972: 197-98). The revised plan of structures around the Mayadevi temple shows that there were several stupas and monasteries at Lumbini and they were under use till the beginning of the rule of the Mohemmadans in the sub-continent (Rijal 1975-77: 35, Fig. 2).

The Shakya Tank, located on the south of the Mayadevi temple, was originally oval in shape. Keshar Shamsher cleaned it fully at the time of his archaeological activities at Lumbini and made it pakka with the help of the kiln-burnt bricks. The tank is 50 feet square, shows six terraces and a flight of steps for descending to the level of the water (ghata). The bricks used in the repair of the tank bear the date of 1939 A.D. in their central cavities. In the summer when the water is dry, the oval shape of the tank is visible even today (HMG Lumbini Development Committee 1978:11, Pl. 5).

Sculptures of the Site

Because Lumbini was under habitation for 2000 years till thirteenth-forteenth centuries A.D., a large number of terracottas, stone sculptures and metallic statues have been found there in the course of various archaeological explorations and excavations. The most interesting piece of antiquity of the Lumbini Garden is the inscribed stone column which was installed there by King Asoka in the middle of the third century B.C. This 21 feet high pillar shows its lower girth 7'-9" and its diameter is 2'-7½ in size. Made of Chunar sandstone with tiny blackish specks, it bears the characteristic Mauryan polish. The pillar has a vertical fissure down to the pillar and its top is broken off probably by lightening, as noted by Huien Tsiang. The capital of the pillar was of bell-shape. Its base, broken into two halves still exists in the compound of the Mayadevi temple. The fragments of the horse capital, which was surmounted on the top has been discovered now. It shows that the pillar was complete in the beginning. The capital shows the usual festoons in the face of the big cyma under which there was a one foot deep hole of 5 inches diameter in which was filled the copper mortice that was fixed above the shaft (Mitra 1972: 197, Mukherji 1969: 34-35, Pandey 1980: 16, Fuhrer 1972: 26-34). The pillar contains an inscription in the Pali language and Brahmi script of the third century B.C. which reads as follows:

"King Piyadasi, beloved of gods, having been anointed twenty years, came himself and worshipped (this spot) saying: "Here Buddha Sakyamuni was born." And he caused to be made a stone (capital) bearing a horse; and he caused (this) stone pillar to be erected. Because here the Worshipful one was born, the village of Lumbini has been made free of taxes and a receiptant of wealth (Fuhrer:1972:33, HMG Lumbini Development Committee 1978: 4)."

The other engravings of the pillar are of the time of Ripumalla and Samgramamalla only. The column is more a piece of art than an object of architecture. Its beautiful tapering towards the top, mirror-like Mauryan shining polish and sophisticated chiselling indicate that art under the skillful Mauryan masons had reached an admirable standard (Pandey, 1980: 16).

The sculpture of nativity of Lord Buddha (size: $5\frac{1}{2}$ x $3\frac{1}{2}$ feet) is the most splendid relief of the Lumbini Garden. In the panel Mayadevi has been represented lifesized in high relief under the Sala tree grasping its branch with her right hand, and her left hand is resting on the hip (Pandey 1980: 16-17). The Nidanakatha contains that when the queen came to this most beautiful and stately tree, its branches curiously bent down to ease her reach like a stemmed reed. Stretching out her hand, she caught hold of the branches and the pains came. Standing thus and holding the branch, she gave birth to Lord Buddha. This legend the artist has successfully carved out in the relief, and this is the earliest and best of all the nativity reliefs so far discovered from the sub-continent. Since, the queen has been depicted in maternity, her waist is held by Prajapati from the right side. The extreme right of the panel is executed with the figure of Brahma and Indra who wear basket-like crowns and stand in devotion before the queen to receive the divine child, as narrated in the Buddhist literature. Below, between Indra and Mayadevi, is a defaced figure of standing Gautama with a halo round his head (Pandey 1980: 16-17; Mitra 1972: 197-98). The sculpture has suffered a vertical abrasion and is broken into three parts. Mukherji is of the opinion that this sculpture was executed "under the orders of Asoka" because it is similar in material and workmanship to the Yaksha door-keepers of Pataliputra of the Mauryan period (Mukherji 1969: 37, Pl. XXIV a, Fig. 2). However, scholars such as V.S. Agrawal think that it is a replice of the figure set by Asoka during the Kushana period (1965: 162-63). Mitra has written that stylistically the sculpture is "ascribable to the Gupta period only" (1972: 197-98). However, as mentioned in the inscription, the word silavigadabhicha is said to mean, among other things, a figure (here of Mayadevi). This would mean, as Mukherji also wrote in the late-nineteenth century, that the sculpture is one which was installed there by Asoka in the third century B.C. at the time he built or enlarged (this fact is yet to be verified by fresh excavations at the site) the holy shrine at the spot of the nativity of the Lord (1969: 34-37).

The sculpture of so-called Vajravarahi (size: 4'-0" x 2'-1") seems to be a sculpture of the Gupta period on stylistic grounds. Slender body of the goddess is particularly notable at this place. It is spilt in two halves across the breast and as coated thickly with oil and vermilion, its icono-plastic details are not very much clear in the relief (Pandey 1980: 17).

Keshar Shamsher Rana collected a large number of sculptures of Lumbini during 1933-39 A.D. and kept them in a monastery of the site under the protection of the Lumbini Dharmodaya Committee for a long time. Today they have been acquired by the Department of Archaeology of

FMG. Among them one head of the Buddha of molted red sandstone which came from the atelier of Mathura is beautifully marked "with a plain bump-like Usnisa" and circular mark of urna on the forehead and shows smiling face and open eyes. Styletically this head is ascribable to the Kushana period (Mitra 1972: 199, Pl. CXIXA). The image of Buddha on chlorite in bhumisparsa-mudra, rigidly seated in the vajraparyankasana on a visvapadma below the Bodhi tree, is also a beautiful relief of the Lumbini Garden (Mitra 1972: 199, Pl. CXIX B, 2). The fragments of slabs representing the Miracle of Srawasti and Eight Great Miracles are two quite notable sculptures of the site. In the latter slab the Buddha is executed sitting in vajraparyankasana on a double-petalled lotus and his damaged right hand shows bhumisparsa-mudra. He is clad in dhoti and scarf, the latter, with ends tucked on the left shoulder, has left the right chest and shoulder bare. Around the Buddha are represented the seven other great accidents of his life of which the birth and the first sermon are alone preserved on the dexter and the offering of honey on the sinister (Mitra 1972: 199-200, Pl. CXX B. 1). The other sculptures of the site include one crudely executed figure of Maitreya on greyish sandstone, a basalt sculpture of a Bodhisattva, a two-armed seated image of Bodhisattva in lalitasana, two images of Ganesa and some fragmentary figures and plaques of males and females crudely executed by the artist (Mitra 1972: 200-201). In these two figures have got clear-cut Pala influence, denoting that they were executed in the Pala period (750-1160 A.D.). The two images of the site, one belonging to a Bodhisattva and the other to a devotee, although of the Kushana period, are very crude in workmanship (Mitra 1972: 200-201).

Of the several terracotta figures of the Lumbini Garden, one Buddha head, set within an architectural frame, is quite beautiful. The open eyes with prominently arched eye-brows and stylised daksinavarta curls, covering the head and the usnisa of the head point that this terracotta is a work of the seventh century A.D. itself (Mitra 1972: 201). The other important terracotta is the head of an old man with a prominent nose. The head is very individualistic and speaks the hands of a skilled artist in its making (Mitra 1972: 201). The third head with spiral curls and open mouth displaying the upper row of teeth is ascribable to the Gupta period on the basis of the plastic qualities (Mitra 1972: 201). Another terracotta of the Gupta period is a fine head with half-closed meditative eyes; a crown is also given to it by the modeller (Mitra 1972: 201). Among the other terracottas, the defaced head of a woman showing fairly good workmanship, the laughing face with open eyes and a mark in the form of a circlet on the forehead, the bust of the female with a necklace in the form of a row of impressed roundels, the lower part of a figure wearing a frilled skirt (antaravasaka) and scarf and the leaf-shaped plaque impressed with the figure of Manjusri Bodhisattva on a double-petalled lotus in the maharaja-lilasana inscribed with the characters of late ninth century A.D. "in the three lines on the dexter and one line on the sinister" are quite notable specimens at this place (Mitra 1972: 201-202). Last decade Mr. B.K. Rijal excavated three terracotta human heads and the upper-half of a figure of a Bodhisattva of the Gupta period (1975-77: Pl. 5 'B'). Among the three heads, one illustrated

on the top of the plate, is crudely moulded and datable to the Kushana period. It is $3\frac{1}{2}$ " in size and badly damaged on the left side of the face. The other two heads belong to the Gupta period. The hair-dressing of one of them is in the style of deep curls called Dhupika Kuntala. "Its thick lips without any bold depression at the two corners of the lips and in the middle of the chin can be seen as evidence of the transitional phase." Although the facial details of the other figure is worn out, its "turban-like hair-dressing is noticable" (Rijal 1975: 32, Pl. 5 'B'). The terracotta sculpture of the Bodhisattva is "endowed with real grace and elegance of the Gupta period." Only the bust of the sculpture is available. Rijal has written that the figure is slim, dressed transparent, the right hand is raised in protection pose. The facial expression reveals spiritual contentment and celestial happiness. The face is elongated with straight nose, smooth cheeks and thick lips, with depression at the corners. The two sides of the chin are separated in the middle. The eye-brows take a sharp curve. The forehead is bright and prominent, and the crown with one crest is decorated with dotted design in a technique of oblique. Thus it is a beautiful terracotta figure of the site (1975-77: 32-33, Pl. 6-A). The terracotta Dharmachakra with 32 spokes was found in the excavation on the eastern side of the Mayadevi temple. The piece seems to be the part of a big panel of Dharmachakra sculpture which was worshipped there by the devotees in the past. Among the other associates of this panel are the two animals, possibly representing a bull and a deer (Rijal 1975-77: 33, Pl. 6-B).

The most important discovery of Mr. Rijal at Lumbini are the fragments of the horse-capital mentioned earlier in this paper. A short report which he published from the Lumbini Development Project contains illustrations of 41 chips of this horse-capital. One of them is quite big and bears distinctive Mauryan polish (HMG Lumbini Development Committee 1978:16, Pl. 6).

Miscellaneous Remains

Lumbini has provided us with many other assets in its various explorations and excavations by the archaeologists. The most notable among them is a Kushana coin of copper, published by Mrs. D. Mitra in her report. The overse of the coin depicts the king facing on the left side and bears a long coat. With his raised left hand he is offering something on the alter. The deity standing on the obverse is too defaced to be identified correctly. "The diametre of the coin is 2.5 cm, the thickness being 6.3 cm. (1972: 203, Pl. CXXIX A, 7). Two copper coins of Lumbini are preserved in the personal collection of Mr. Surendra Singh, a pleader of Kapilavastu (Mitra, 1972: 203, Footnote 1). Although several kind of objects have been found in the excavations of Lumbini after 1970, nothing is mentioned in the report which came out from the Department of Archaeology and Lumbini Development Project. Only Mrs. D. Mitra has given details and illustrations of a few such antiquities from the site. Of the five beads referred to by Mrs. Mitra, one, long and barral-shaped, is of semi-precious stone, while the rest of terracotta "stimulating the shape of areca-nut" (1972: Pl. CXXIX 2, 5). One cylindrical ear-stud of jasper was also found at Lumbini (Mitra 1972: 204).

A large number of decorated bricks and tiles have been found in the excavations of Lumbini. Designs of lotus-petals, chaitya-windows, grids, floral and plant motifs and stepped patterns, as on the bricks of Kudan, are very commonly seen impressed on them (Mitra 1972: 204-205).

The monuments and antiquities reveal that Lumbini was under continuous habitation till the fourteenth century since the sixth century B.C. This fact is elucidated by the sherds of the degenerate Grey Ware, N.B.P. Ware and several varieties of red wares also. The pottery of Lumbini, as the author said earlier, is comparable to the pottery-types of Tilaurakot (Kapilavastu) and Kudan in Nepal and periods III and IV of Hastinapur in India (Mitra 1972: 204-205). Recently a large number of spouted vessels have been found deposited in a well; their ceremonial use is clear from their shapes. The surface finds of the site include some beads of terracotta and semi-precious stones, mullers, flesh-rubbers, fragments of iron nails and small bits of bronze objects (Mitra 1972: 206). A large portion of Lumbini remains unexcavated. Yet the author of this paper is sure that on excavation many important and interesting antiquities will be discovered and they will be of great help in revealing the ancient history and grandeur of the site.

Lumbini Development Project

Since early 1968 various phases of development work have been carried out both by the Government of Nepal and the United Nations Organizations according to the master plan of the Lumbini Development Project. The master plan comprizes three main elements, namely--the Lumbini Village, the Monastic Enclave and the Sacred Garden. Emphasis has been given under the master plan to create an atmosphere of tranquility, universality and clarity in consistent with the idea of serene environment of the time of the birth of Lord Buddha.

Note: This paper does not contain the details of the archaeological discoveries made by the archaeologists of the Lumbini Development Committee after the winter of 1982.

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Survey Report:

*Herding and Socio-economic Change Among Langtang Tibetans**

Tom Cox

Introduction

Livestock husbandry is an essential feature in the traditional economy of many high altitude Tibetans in Nepal. The importance of animals to Tibetan communities in the Himalayas is reflected in the intensity of ritual activity and sociopolitical organization which often accompany herding.

In some Himalayan areas there have been major socio-economic changes in recent years. Livestock and human overpopulation, the building of cheese factories and the advent of tourism, have all had a great effect on some Himalayan herders. Ecological problems caused by overpopulation of people and livestock have perhaps caused the most significant changes for some Himalayan herding groups.

This article is concerned with the Tibetan herdsmen of Langtang, an east-west running Himalayan valley which lies in north-central Nepal. How are Langtang herdsmen organized, socially and politically? How have recent socio-economic and ecological changes affected the traditional life of herders in Langtang? These and other questions will be discussed through the course of the article.

The inhabitants of Langtang valley include two distinct ethnic groups, Tibetans and Tamangs. The Tamangs, a people who speak a Tibeto-Burman language, inhabit the lower reaches of the Langtang valley, between 5,000 and 7,000 feet in elevation, where they practice subsistence farming, some trade and livestock husbandry. The Tamangs and Tibetans carry on a vigorous trade, which primarily involves livestock, grain and fabric. The Tamangs and Tibetans also have a political agreement which allows them, during certain times of the year, to use each others' land for grazing. The details of this arrangement will be discussed later in the paper.

The Winter Herding System of Langtang

The main village of the Langtang Tibetans is located at 11,500 feet. The herders of Langtang, however, pasture their animals as high as 15,500 feet in the summer, and south, to elevations as low as 6,000 feet in the winter. Since yak cannot live below 10,000 feet, one

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characteristic of the winter herding system is that it only involves Tibetan cattle and chauri (yak-Tibetan cow crossbreeds).

The cold weather and lack of winter rain causes much of the grass in the Langtang valley to dry up. Since the winter grass is thin and spread over a large area, the social organization of winter herders in Langtang is much different than in summer, when grass is plentiful. A close examination of the movements, livestock and people of one herding group reveals some general features of the winter herding system as a whole.

The herding group to be discussed is called Hongal, after the largest of the winter carcas (herding camps). In terms of numbers of livestock Hongal is the largest winter herding group. At Hongal there are 220 heads of livestock between just 5 families. The Hongal herds-men first leave Langtang village for their winter pastures in mid-October, October is an important time for all the Langtang herders, for it signals the end of the cheese-making season.

The first winter camp of the Hongal herders is made at the pastures of Ghora Tabella, which lie perhaps three miles below Langtang itself, at 10,000 feet. The herders stay just 10 to 15 days at Ghora Tabella before the autumn grass runs out and they have to move again. Where the herders go on their second move is a matter of individual choice. Two families usually go to camps in the forest on the south side of the Langtang river. The other three families usually make individual camps in the small side canyons which shoot off from the north side of the main Langtang valley.

After an approximately 2 to 3 week stay at their individual locations, the herders come together again at the Rimche pastures. These pastures lie just 5 miles south of Ghora Tabella, at 8,000 feet of altitude. After a ten-day stay at Rimche the herders take their livestock on the longest journey yet, to the pastures of Hongal, which lie 10 miles south of Langtang at 6,000 feet.

The pastures of Hongal belong to the residents of Syabru Bensi, a village inhabited by Tibetans and Tamangs. The Langtang herders have an agreement with the residents of Syabru Bensi. When the Langtang people pasture their livestock on Syabru Bensi land they must pay a tax of three rupees per animal to the village purdhan (headman). In the summer, when there is abundant grass in the alpine pastures, the Syabru Bensi people herd their sheep on Langtang land and pay a tax of one rupee per animal.

Good pasturage enables the Langtang herders to keep their animals at Hongal for a month and a half, before they have to scatter again. After leaving Hongal some of the herders take their livestock to the forested areas across the Langtang river. Other herders take their animals back to Langtang village, where they are kept in hokang (sheds under the houses) and fed on stored grass. Still other herders camp in various locations along the trail back to Rimche. In all cases the

herdsmen stay at their individual locations until June, when the grass sprouts anew and the livestock return to the alpine pastures.

The Hongal herders are, in many respects, representative of Langtang's winter herding system as a whole. The diffuse nature of winter pasturage forces the herdsmen, at certain times, to split up and make individual camps in order to more efficiently exploit what grass there is. Also, during the winter, Langtang Tibetans generally spend less time in the herding camps, and must travel longer distances to reach good pasturage, than herders do in the summer. Socio-politically, the winter herding system is much less organized than the summer one. Winter herders can break off from the group whenever they want and make new camps wherever they want. This is in sharp contrast to the summer herding system, which will now be discussed.

The Summer Herding System of Langtang

The summer herding season in Langtang begins in early June. At this time all the herders take their livestock to the alpine carcas (herding camps) which lie between 12,700 feet and 15,000 feet. There are 5 summer herding groups in Langtang. Each group has its own territory in which only the animals from that group can graze. The herding groups each have their own name, as does the territory they herd in. What follows is a list of the herding groups and their respective territories.

<u>Name of Herding Group</u>	<u>Name of Territory</u>
Turpuchey	Turpucheba
Yala	Yalacheba
Dakpuchey	Dakpucheba
Noobri	Noobricheba
Langsisha	Langsishacheba

Within each herding group's territory there are 4 to 5 carcas. The herdsmen spend an approximately equal amount of time at each carca during the course of a single herding season. Four of the five major herding groups are located on the north side of the Langtang river, where the best pasturage is found.

Because there is such an abundance of summer pasturage in Langtang, the herders, in and of themselves, are not overly destructive to the grass supply. However, over the last 20 years, livestock population increases in Langtang have caused some changes in the herding system. In the summer, for example, the herdsmen spend less amount of time at each carca than they used to. As soon as the grass in one area runs out the herders must move to a new carca. Previously, about twenty years ago, the herders could stay for up to two months at a time in each carca. However, as the animal population has grown, Langtang herders have been able to spend less time in each carca. At present, the herders can spend an average of only 3 weeks at a time in any given carca. Livestock overpopulation, however, has not yet affected summer milk production in Langtang.

The social organization of the summer herding system in Langtang differs considerably from that in the winter. The summer herders are, in general, highly organized and more protective of their herding territories than those in the winter. Each herding group has its own territory which a group, under no circumstances, can move out of. Every summer move to a carca involves all the herders, as a group. Individual herders are not allowed to break off and make their own camps, as they do in the winter.

There are two factors which explain the high degree of sociopolitical organization among summer herders in Langtang. In the summer, grass is plentiful in the alpine pastures, and milk production is high. Thus, there is more incentive for herders to protect their pastures in the summer than in the winter, when grass is scarce and milk production is low. The summer pastures are also smaller in area than the winter grazing areas, and the grass land is much more concentrated. As a result, the summer herding groups do not have to split up or cover long distances to exploit a diffuse grass supply, as they have in the winter.

Livestock

Tibetan cattle, yak, brimo (female yak) and all their hybrids make up the wide variety of livestock to be found in Langtang. What follows is a description of the types of livestock found in Langtang and the way in which they contribute to the economy.

Yak. Yak is often sold to Sherpas (who live in the neighbouring area of Halembo), or to the Tamang communities which lie to the southwest of Langtang. A healthy three year old yak can be sold for as much as 3,000 to 5,000 rupees (between 210 and 350 US dollars). The Tamangs and Sherpas usually keep the yak on the high passes above their villages. They then take their cows up to breed with the yak and sell the hybrid offspring back to the Langtang people for a considerable profit.

Brimo. A brimo is valued for the milk it produces. In the summer a brimo gives up to two litres of milk a day.

Pamoo (Tibetan cow). Tibetan cattle are small, weak animals which are especially adapted to live at high altitudes. Pamoo gives only about one and a half litres of milk a day during the summer.

Brimo + Tibetan Bull = (♀) Brimzo. The brimzo is a fairly rare cross breed since the brimo (female yak) does not always conceive when mated with a Tibetan bull. The brimzo are the most highly valued animals in Langtang, for they produce up to 4 litres of milk a day. They can cost up to 4,000 rupees each.

Brimo + Tibetan Bull = (♂) Towlboo. The Towlboo are huge, but sterile animals which can be used to plow fields. They are also taken to Tibet where one can be traded for up to 9 sheep.

Yak + Pamoo = (♀) Pamzo. The pamzo gives up to 3 litres of milk a day. When mated back to a yak they can produce a valuable female hybrid. This animal is also called a pamzo. After reaching maturity a pamzo can cost up to 3,000 rupees.

Yak + Pamoo = (♂) Zopkyo. The zopkyo are huge animals, very similar to the Towlboo in appearance, and have the same economic use.

Yak + Palang (lowland cow) = (♀) Shanzo. The shanzo gives up to 3½ litres of milk a day and may live up to 27 years of age. The shanzo is sold for about 3,000 rupees each.

As can be seen from the descriptions above; the Langtang Tibetans have a wide variety of livestock, with an equally diverse range of uses, including agricultural work (plowing), dairy production and trade. Besides yak, brimo, Tibetan cattle and their hybrids, the Langtang Tibetans also herd sheep, which are valued for the wool they produce.

It generally takes only one person to manage the dairy production of a single family's herd. However, since most milk is given to the cheese factory, it now requires a contribution of milk two or more families, within the same carca, in order to have enough milk to churn butter. For the sale of milk to the cheese factory, and in caring for livestock, the basic economic unit is the family. However, to make butter and cheese (the most important dairy products) the basic economic unit is two or more households, since one family is, in general, unable to provide enough milk on its own. When a Tibetan family donates milk for a butter churning session, they will receive the same amount of milk back when it is time for them to make butter.

Dairy Products

The Langtang herders produce 6 kinds of dairy products in the summer. Homa (milk) is usually sold to the cheese factory, but a substantial portion of each day's yield is always kept for personal consumption. Mar (butter) is the most valuable dairy product, because it has so many uses. Butter is added to almost every kind of food in Langtang, and is recognized as a valuable nutritive supplement for children. Butter is also an essential ingredient in phucha (Tibetan tea) and is used in a wide variety of rituals. Churmee (butter lamps) accompany almost all ritual and festival activity in Langtang. Butter is also used to give people yerca (a spot on the head), an act that occurs in a wide range of ritual activities. Butter is also an essential component in the making of torma (representations of gods made for almost all rituals and festivals). Butter is so important that the herders are required to give a certain amount to the gompa (monastery) every year. This is done at a special ceremony called Marke Gyamzo, which is performed every fall at the Kyangin Gompa above Lantang. Butter and ser (cheese) are made at the same time. The cheese is dried for weeks before finally being eaten. The final dried product is called churpee. Show (yoghurt) is a highly valued food. Yoghurt, when it is available, is the food most often given when important people come to visit Langtang. Tarra

(buttermilk) is the least valued of dairy products. The taste and nutritive value of buttermilk is seen as inferior to that of other dairy products.

The Cheese Factory

The cheese factory of Langtang is located next to Kyangin Gumpa, less than a day's walk from any one of the carcas. There are two cheese-makers collect the milk from the herders, record how much is given and save a sample to be tested for fat content, a procedure which is done at the factory itself. The amount of money the herders receive is dependent on both the amount of milk and the fat content. The higher the fat content the more money the herders receive.

After the cheese is made, in the early morning, it is carried down to the factory for storage. During the summer the cheese is periodically carried to Kathmandu by porters. The cheese makers who actually stay in the carcas are usually Langtang residents. But the cheese factory manager and his assistant belong to the Hindu caste.

The cheese factory has had a profound effect on the populace of Langtang. The vast proportion of milk now produced in Langtang is sold to the cheese factory. Thirty years ago, before the factory was built, the Langtang herders would trade their cheese and butter with lowland Nepalis, or other Tibetans, for wool, salt and sheep. With the advent of the cheese factory this trading system has died out. The Langtang people still occasionally go on trading expeditions to Tibet. However, in general, they do not trade in dairy products; but in supplies brought from Kathmandu (the capital city of Nepal), such as brown sugar, noodles and chili peppers.

The cheese factory has been partially responsible for bringing the Langtang people more into the cultural, political and economic mainstream of Nepal. Effective operation of the cheese factory requires a knowledge of the Nepali language and basic accounting. By settling conflicts with the cheese factory the herders have also learnt a great deal about the legal and political system of Nepal. Interaction with the cheese factory has also required the Langtang people to put more of a value on a Nepali education. In short, the cheese factory, along with the panchayat system (political system of Nepal) and Nepali schools, has been responsible for the gradual sanskritization of the Langtang herders.

Previously, trade with Tibet and isolation from Hindu-caste Nepali communities helped maintain Langtang's Tibetan identity. The cheese factory caused a decrease in trade with Tibet, and created a need for Langtang people to learn the Nepali language and culture. These factory combined with ecological problems, population growth and economic decline, combined with the encroachment of Hindu-caste Nepali civil servants, have helped undermine the traditional Tibetan culture of Langtang.

Herding and Ecological Problems

The sale of milk is by far the most important source of income for the residents of Langtang. Because of the harsh climate and high altitude, the Langtang Tibetans can grow only three crops--potato, barley and buckwheat--on what little land there is in the narrow, Langtang valley. Thus, the subsistence of each family in Langtang is, to a large degree, dependent on their ability to maintain a herd of animals.

The increase in the population of Langtang's livestock has primarily been in the numbers of yak and brimo. Although the zomoo (generic term for the female hybrids which include brimzo, pamzo and shanzo) are the most highly valued animals, they are rare in Langtang and very expensive to buy from Sherpas and Tamangs. Brimo, however, are relatively cheap (2,000 rupees each) and readily available in Langtang. Even though they give less milk than zomoo, brimo are still valued for their tseepa (belly hair used for making rope and clothing), and potential as breeding stock.

As was previously discussed, livestock population increase in Langtang has not caused serious grass shortage in the summer months. However, in the winter, when the grass dries up or is covered with snow, lack of pasturage becomes an acute problem and animals often starve. Even though many livestock go far south of Langtang in the winter, there is still insufficient grass for the yak which remain in the vicinity of the village. In middle and late October the villagers cut grass to feed livestock in the winter. However, as Langtang's livestock population has increased, harvested grass has been insufficient for the animals' winter needs.

There are two kinds of areas in Langtang where people may harvest grass; they are known as the tseetsu and cheetsu. Tseetsu are fields of grass which actually belong to a single person or family, and may not be cut by other people. Cheetsu are open areas of grass which belong to no particular person. The cheetsu can be cut by anyone, but the time of the grass harvest is carefully controlled by the purdhan (village headman). This is done to give everyone an equal chance to harvest an equal amount of grass. The grass harvest is a time of intense work and social interaction. To harvest as much grass in as little time possible, the Langtang people use a system called chooree tzegan. In this system one family will gather all of their friends and relatives together to help harvest as much grass as possible in a given amount of time (usually a few days). After a family harvests a sufficient amount of grass, they help their friends and relatives with their grass harvest. Despite the chooree tzegan system, the grass harvest is at a time of considerable tension and conflict. To make enough hay to last through the winter, Langtang herders will often attempt to steal grass from their neighbours tseetsu. As a result, fights often breakout, despite the efforts of the purdhan to keep peace.

The grass shortage in Langtang is so acute that in the winter of 1983, after a heavy snowfall, over 100 animals died. For families who own many tseetsu and have comparatively few animals (below 25) lack of grass may not be a problem. But for villagers with between 40 and 65 animals and very few tseetsu, starvation is a constant danger.

Membership in Carcas and Inheritance of Livestock

In Langtang, summer herding in the alpine pastures is dependent on obtaining membership in one of the five local herding groups. For the vast majority of Langtang herders, membership in a carca is obtained through patrilineal inheritance. When a Langtang man dies, his sons will continue to herd their animals together, in their father's carca.

Within a given household, one man usually has the responsibility of milking all of his brother's zomoo and brimo. The proceeds from selling milk to the cheese factory are divided equally between all the brothers.

After getting married, a man will usually build his own goray (Langtang word for herding hut, not to be confused with goth, the Nepali word) and herd his livestock separately from his brothers.

For Tibetans who were not born in Langtang, membership in a carca can sometimes take years to obtain, although in some cases it can be accomplished much more quickly. Most of those Tibetans who have settled in Langtang, but were not born there, are refugees from Tibet. The time it takes for a refugee to gain membership in a carca, is dependent on the nature of his kinship network in Langtang. In one case a Tibetan man, Khampa Renzin, married a Langtang woman and was able to pasture his livestock with her brothers in the Yala carca. In this case his rights to residence in Yala were obtained almost immediately after his marriage.

In another case, a Tibetan refugee man, Dame, has been unable to obtain permanent membership in a carca for 10 years from the time he started raising livestock. The reason for this is that Dame's wife does not have any livestock, or a father through which her husband can obtain herding rights. For 3 years Dame pastured his animals with his wife's aunt's herd. When Dame's herd increased to 16 animals it became too big for his wife's aunt to look after. By this time Dame's older sister was married, and he was able to pasture his animals with her husband. His makpa (brother-in-law) looked after the animals and milked them for 5 years. After this time the strain of caring for two herds of livestock proved to be too much, and Dame was forced to pasture his animals with his shangboo (sister-in-law's husband). For the last two years Dame's livestock have remained with his shangboo. In none of the places where Dame has kept his animals has he been allowed to build his own goray. When a man is allowed to build his own goray in Langtang it signifies that he has obtained permanent grazing rights to the pastures of the herding group he is staying with.

Current members of Langtang's carcas have great incentives for not allowing new families to have permanent grazing rights to the summer pastures. To give newcomers permanent herding rights would mean putting greater pressure on the alpine pastures, resulting in lower milk production and lower potential for herd growth. Ten years ago, sanctions against giving carca membership to new herdsman were not so strict as they are today. But with livestock overpopulation, and grass shortages, carca membership is now difficult to obtain.

The case of Khampa Renzin illustrates another important factor in obtaining permanent grazing rights to the summer pastures. Khampa Renzin's livestock have never increased to more than 6 animals, meaning that it has not been difficult for his makpa to look after his livestock. Dame, on the other hand, has almost twenty yak and zomoo. Since Dame's relatives do not have many working-age members in their families, and Dame himself has not been able to gain permanent grazing rights with a herding group, obtaining enough manpower to look after his livestock has been difficult. For this reason Dame has had considerable trouble in finding a place to keep his livestock on a permanent basis. Thus, herd size is an important factor in obtaining permanent grazing rights to the alpine pastures of Langtang.

Change in Leadership

As was previously discussed, sanskritization, the advent of the cheese factory and ecological problems have all had a profound effect on many aspects of traditional life in Langtang. The purdhan-ship is one of the traditional institutions which has been profoundly affected by the sociocultural changes. Before the current grass shortage and influx of caste Hindus, tourists and mountaineers, livestock wealth was a necessary prerequisite for being a purdhan of Langtang. Without the wealth which animals represented, the purdhan could not make the frequent required trips to the government centres of Kathmandu or Dhunche, or even wield authority over his fellow villagers. For decades, before the current purdhan was elected, the headman of Langtang was always elected from a single clan, called the Tomaray, who owned most of the livestock in Langtang. Members of the Tomaray clan, besides previously being the purdhans of Langtang, were also the highest ranking lamas (monks). Ten years ago the Tomaray people owned close to 100 animals. However, due to starvation and sale of livestock, the Tomaray now own only 60 animals.

When epidemics, avalanches and/or crop failure used to strike Langtang, they were seen by the Tomaray purdhan as originating from within Langtang's own cultural universe, the work of unhappy gods or evil spirits. In accordance with this view, the Tomaray headman would usually prescribe a ritual solution to the problem. The form of ritual to be performed was decided by the purdhan, in conjunction with the local lamas. Occasionally, in times of severe food shortages, or in response to complaints against the cheese factory, the Tomaray headman would meet with Nepali government officials. However, because of the Tomaray headman's inability to read and write Nepali, and ignorance

concerning the legal and political systems of Nepal, they were generally unable to enlist significant amounts of aid from the Nepali government.

As sanskritization has eroded the traditional culture of Langtang, and the cheese factory, tourism and grass shortages have altered the local economy, the power base and quality of leadership in Langtang have changed. The current purdhan of Langtang, Dorjee (elected two years ago), is the wealthiest man in the village, even though he does not own the most livestock, or belong to the Tomaray clan. The basis of Dorjee's wealth is a hotel and a shop which cater to mountaineering and tourist groups. Dorjee is respected not for his religious and ritual knowledge, but for his ability to read and write Nepali, and deal with Nepali government officials. When avalanches, epidemics or crop failure strike Langtang now, Dorjee always enlists the aid of the Nepali government first, before consulting with the local lamas.

The business provided by tourism and mountaineering make Dorjee richer every year, while the Tomaray clan's livestock steadily decrease in number through starvation and sale to outside people. Livestock the traditional basis for wealth and power in Langtang, is no longer for everyone the most lucrative source of income. In Langtang, the fact that the Tomaray clan's power has declined, and that Dorjee is now a successful and popular purdhan, cannot be seen as an incident isolated from Langtang's society as a whole. The changes in the purdhan institution of Langtang are symptomatic of greater socioeconomic forces--the advent of tourism, decline of livestock husbandry, sanskritization--which have affected almost all aspects of Langtang's traditional culture.

Rituals Associated With Livestock Husbandry

The economic importance of livestock and, indeed, the very relationship between animals and their owners in a symbolic universe where rules and possibilities for life are set forth by Tibetan Buddhism, gives yak, Tibetan cattle and their hybrids, great ritual importance in Langtang. The ritual significance of yak, brimo and zomoo, manifests itself in two distinct kinds of rituals.

The most common type of rituals associated with livestock can be classified under the general heading of summer herding rituals. The summer herding rituals can be further broken down into 4 separate categories; daily rituals, rituals which are performed when a camp moves, curing rituals and a summer festival to secure the spiritual welfare of the herds.

The daily herding rituals of Langtang are short and relatively easy to perform. When the head of the goray rises in the morning, his first act is to place an offering of sacred plants (known as puma and sunshing) on the fire. While this offering burns the herder prays to the most important local deities, Gonelerop and Pegoong, and asks them to protect both the livestock and herders.

The ritual performed when herders move to a new camp is more elaborate than the daily ritual. The move ritual begins, as the daily ritual does, with an offering of sunshing and puma, and prayers to Gonelerop. After the offering and prayers to Gonelerop, all the brimo and zomoo in the carca are given a yerca (spot of butter on the forehead), as part of a blessing to protect them during the move. Just before the herders leave, they give themselves a yerca and make one last prayer to Gonelerop.

The move can be a dangerous time for the livestock of Langtang. The animals sometimes slip and break their legs. On other occasions livestock wander away and become lost. Sometimes a snow leopard will be waiting to kill livestock in the area of the new carca.

In Langtang there are a variety of rituals which are performed when livestock become sick. These rituals are generally exorcisms which are performed if a yak or zomoo is believed to be possessed by an evil spirit.

Kala Salgen, the summer festival of Langtang, takes place around July, at which time all the herders gather at Kyangin Compa, just below the alpine pastures. During Kala Salgen the herders dance, sing, and drink considerable amounts of chung, while the village lamas perform a day-long ritual to secure the spiritual welfare of the herds.

The curing rituals, summer festival, daily rituals and rituals performed when a herding group moves to a new location, all have one thing in common, they are done to protect the livestock from accidents, predators and disease. This complex of protection ceremonies are quite different from the second type of livestock associated rituals in Langtang, which will now be described.

The most important livestock related ritual in Langtang is known as Torpee. In Torpee yak becomes a living medium through which the most important deities are believed to express their feelings towards the people of Langtang. In response to this divine expression the Langtang people pay homage to the gods, through the medium of the dedicated yak, by performing elaborate rituals. This is in sharp contrast to the summer herding rituals, in which the herders only ask the gods for protection through prayers and small offerings of sacred plants.

Torpee is usually performed in February. At this time three yak, dedicated to the three most important gods of Langtang, are brought to the village gompas. What follows is a list of these gods and the names of the yak which are dedicated to them.

Classificatory

<u>Deity</u>		<u>Name of the Yak Dedicated to the Deity</u>
Gonelerop	-----	Oorea
Pegoong	-----	Gomboo
Cheekyoom	-----	Gonde

Those yaks which are dedicated to the gods are chosen on the basis of their colour and size. Oorea is by far the most important of the yak, since he is dedicated to Gonelerop, Langtang's most important god. Oorea is chosen on the basis of his large size and white and reddish-brown colouration. Gomboo is a solid black yak and Gonde in black, with a white spot on his forehead.

When Gonde, Gomboo and/or Oorea die, new yak with the same colouration must be found and dedicated anew. When the new Gonde, Gomboo and/or Oorea are recognized in someone's herd every villager donates some money so that the dedicated yak can be bought and, out of respect to the gods, allowed to roam free over the hills. Oorea, Gonde and Gomboo remain free until Torpee, when they are kept in front of the gompa. On the day of the Torpee ritual Oorea, Gonde and Gomboo are decorated with darna (multi-coloured ribbons with Buddhist prayers printed on them). After the darna are all in place, the lamas smear butter on the forehead and genital of Oorea. One lama then sprinkles water on Oorea's shoulders. If Oorea shrugs his shoulders it is a sign that Gonelerop is happy with the Langtang people. If Oorea remains still it is a sign that he is displeased, and more rituals must be performed. When the final kooroom (ritual), in which many sacred texts are read, is finished, the rest of the day is spent in dancing, watching performances by the azarey (clowns) and general celebration with the feeling that, once again, the gods have communicated their awareness and involvement in the lives of the Langtang people.

The symbolic importance of livestock in Langtang is reflected not only by the wide variety of livestock-associated rituals, but also by the existence of a ritual code of behaviour of people towards animals. For example, when this investigator was living with the herders some caste Hindus, who were working for a mountaineering expedition, came into our carca and purchased a sheep from one of the herders. The Nepalis slaughtered the sheep just outside our carca. Since the killing of any living creature is strictly against Tibetan Buddhist law, the members of our carca were both furious and scared. Many of the herders said the gods would have vengeance against both the mountaineers and the Langtang people for allowing such a thing to happen. Later, there was crop failure and one mountaineer did in fact perish. The sheep-killing incident was cited by the herders as the underlying reason for both disasters. The sheep-killing was a severe violation of the Tibetan's ritual code of behaviour towards animals. When this code was broken Langtang's symbolic world was seriously disturbed.

Contributions to Nepalese Studies:
Cumulative Index 1973-1985 by Theme & Author

Purna P. Amatya
 CNAS / TU

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Volume Number	Issue No.	Date of Publication	Language		No. of Reviews
			English	Nepali	
1.	1	December 1973	3	2	5
	2	January 1974	6	2	3
2.	1	February 1975	12	1	3
	2	June 1975	7	2	X
3.	1	January 1976	7	X	X
	Special issue	June 1976	5	X	X
		September 1976	4	1	2
4.	1	December 1976	5	X	2
	2	June 1977	6	X	3
5.	1	December 1977	7	1	1
	2	June 1978	4	1	X
6.	1	December 1978	4	2	2
	2	June 1979	6	1	1
7.	1 & 2	Dec. 1979 & June 1980	7	3	4
8.	1	December 1980	8	2	1
	2	June 1981	7	3	2
9.	1 & 2	Dec. 1981 & June 1982	5	1	2
10.	1 & 2	Dec. 1982 & June 1983	6	4	1
11.	1	December 1983	5	2	1
	2	April 1984	5	2	1
	3	August 1984	7	1	1

Volume Number	Issue No.	Date of Population	Language		No. of Reviews
			English	Nepali	
12.	1	December 1984	5	X	1
	2	April 1985	6	1	2
	3	August 1985	5	X	2

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Contributions to Nepalese Studies
Cumulative Index 1973-1985

Classified List of Articles

010 BIBLIOGRAPHY

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200 RELIGION

3. Bairagi Mandals. R. Burghart, 3(1) Jan. 76, p. 63-104.
4. The Book of Lepcha Belief or Wanism. I.S. Chemjong, 2(2) June 75, p. 137-144.
5. The Concept of Asta Mangala in Tibetan Culture. R. Dhungel, 12(2) Apr. 85, p. 45-54.
6. Perceptions about the Geography of Religious Sites in the Kathmandu Valley. R.H. Stoddard, 7(1,2), Dec. 79, p. 97-118.

300 SOCIAL SCIENCES

300.7 Social Research

7. Social Research in Nepal: A Critique and A Proposal. C. Mishra, 11(2), Apr. 84, p. 1-10.

304.6 Population & Family Planning

8. Ages at Menopause and Menarche in a High Altitude Himalayan Population. C.M. Beall, 9(1,2), June 82, p. 49-54.

9. Contraceptive Use and its Determinants in a Semi-urban Community: An Experience from Mahankal Panchayat. R.M. Shrestha, 9(1,2), June 82, p. 31-48.
10. Family Type and Fertility in Rural Nepal. Y.B. Karki, 11(3), Aug. 84, p. 47-62.
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12. Labour Participation and Fertility of Rural Women in Nepal. B. Dhungel, 8(2), June 81, p. 73-82.
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15. Social Structure, Fertility and the Value of Children in North-western Nepal. N.E. Levine, 9(1,2), June 82, p. 1-20.

304. Migration

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18. Indo-Nepal Migration: Problems and Prospects. V.B.S. Kansakar, 11(2), April 84, p. 49-70.
19. Migratory Traders of Baragaon. S. Schuler, 5(1), Dec. 77, p. 71-84.

305.8 Ethnic Groups

20. The Byanshi: An Ethnographic Note in a Trading Group in Far Western Nepal. A.E. Manzardo et al, 3(2), Sept. 76, p. 84-118.
21. An Ethnohistorical Study of Bandipur. L.L. Iltis. 8(1), Dec. 80, p. 81-146.
22. Limbuwan Today: Process and Problems. B.P. Uprety, 3(2), Sept. 76, p. 47-70.
23. Nepal: Hindu-Tribal Interface. P.R. Sharma, 6(1), Dec. 78, p. 1-14.

78 CNAS Journal, Vol. 12, No. 3 (August 1985)

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25. Economic Relationships Between Occupational Castes and High Castes in Central Nepal. V. Vouillier, 4(2), June 77, p. 99-110.
26. The Concept of Economy in a Peasant Society: A Case Study of the Athpahariya Rais in East Nepal. D.R. Dahal, 8(2), June 81, p. 55-72.
27. The Ban Rajas - A Vanishing Himalayan Tribe. J. Reinhard, 4(1), Dec. 76, p. 1-22.
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30. The Organizing Principles of Brahmin-Chhetri Kinship. V.S. Doherty, 1(2), June 74, p. 25-41.

Gurungs

31. The Gurung Personality Structure. M.P. Regmi, 11(1), Dec. 83, p. 61-88.
32. The Rodighar and its Role in Gurung Society. E. Andore, 1(2), June 74, p. 10-24.

Magars

33. Marital Patterns and Women's Economic Independence: A Study of Kham Magar Women. A. Molnar, 6(1), Dec. 78, p. 15-30.
34. Siberian Shamanistic Traditions Among the Kham Magar of Nepal. D. Watters, 2(1), Feb. 75, p. 123-168.
35. The Kuswar of Chaithali (Central Nepal). C. Jest, 4(2), June 77, p. 1-46.

Newars

36. Household Organization Among Newar Traders. D. Quigley, 12(2), Apr. 85, p. 13-44.
37. Newar Kinship Terms in the Light of Kinship Topology. I Shrestha-charya, 4(2), June 77, p. 111-128.
38. Recent Economic Changes in a Newar Village. H. Ishii, 8(1), Dec. 80, p. 157-180.

39. The Origins of sTod-pa: A Nyinba Clan Legend. N. Levene, 4(1), Dec. 76, p. 57-75.

Sherpas

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Tamangs

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Thakalis

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48. High Altitude Animal Husbandry and the Thakalis of Thak Khola: Biology and Trade in the Himalayas. A.E. Manzardo, 11(2), Apr. 84, p. 21-35.
49. Making a Living in the Nepal Himalayas: The Case of the Thakalis of Mustang District. M. Vinding, 12(1), Dec. 84, p. 51-106.
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Tharus

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306 CULTURE

53. *A Cross-Cultural Study of Nepalese and Indian Optimism*. M.P. Regmi and H.S. Asthana, 8(2), June 81, p.83-96.
54. *Cultural Repercussions of Childlessness and Low Fertility in Nepal*. L. Stone, 5(2), June 78, p. 7-36.
55. *Food Symbolism in Hindu Nepal*. L. Stone, 6(1), Dec. 78, p. 47-66.
56. *Limbuwan Today: Process and Problems*. B.P. Upreti, 3(2), Sept. 76, p. 47-70.
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306.8 FAMILY

59. *Factors Affecting the Age at Marriage in Nepal*. J.M. Tuladhar, 12(2), Apr. 85, p. 55-62.
60. *Family Type and Fertility in Rural Nepal*. Y.B. Karki, 11(3), Aug. 84, p. 47-62.
61. *The Kinship Basis of a Nepalese Rural Ward*. F.E. Okada, 4(1), Dec. 76, p. 23-38.
62. *Newar Kinship Terms in the Light of Kinship Typology*. I. Shrestha-charya, 4(2), June 77, p. 111-128.
63. *The Organizing Principles of Brahmin-Chhetri Kinship*. V.S. Doherty, 1(2), June 74, p. 25-41.
64. *The Role of Kinship in the Formation of Janakpurdham Pilgrim Groups*. R. Burghart, 2(1), Feb. 75, p. 71-90.
65. *Sex and Motherhood Among the Brahmin and Chhetris of East Central Nepal*. L. Bennett, 3(56), June 76, p. 1-52.

307.72 Sociology, Rural

66. *The Ankhu Khola Valley: An Introduction to a Multi-Disciplinary Research Project in Nepal*. C. Jest, 3(1), Jan. 76, p. 33.
67. *Case Study of Small Farmers in Naktajhih Dhanukha, Nepal*. R.P. Yadav, 5(1), Dec. 77, p. 15-39.

68. Changing Patterns of a Subsistence Economy. C. Euler, 11(3), Aug. 84, p. 63-98.
69. First Annual Progress Report on Nepal's Small Farmers Project. G.C. Clark, et al, 5(2) June 78, p. 69-86.
70. Decision Making Among Farming Families. C.J. Miller, S.J., 8(2), June 81, p. 19-34.
71. The Concept of Economy in a Peasant Society: A Case Study of the Athpahariya Rais in East Nepal. D.R. Dahal, 8(2), June 81, p. 55-72.
72. Land Use Pattern and Ecology in the Madi Valley. V.P. Shrestha, 11(1), Dec. 83, p. 89-100.
73. Atini Jaon Panchayat: A Presentation. B.E. Borgstrom, 1(2), June 84, p. 1-9.
74. Family Type and Fertility in Rural Nepal. Y.B. Karki, 11(3), Aug. 84, p. 42-62.
75. Labour Participation and Fertility of Rural Women in Nepal. B. Dhungel, 8(2), June 81, p. 13-82.
76. Padipur: A Central Terai Village. D.B. Bista, 3(1), Jan. 76, p. 1-32.
77. The People of the Upper Ankhu Khola Village. G. Toffin, 3(1), Jan. 76, p. 34-46.
78. Tamang Settlement and Subsistence Economy Observations in an Eastern Nepalese Village (Sindhu Palchowk), C. Antweiler, 11(3), Aug. 84, p. 99-110.

320 POLITICS & GOVERNMENT

79. The Daudaha (Inspection Tour System) Under the Ranas. D.W. Edwards, 3(2), Sept. 76, p. 7-34.

327 FOREIGN RELATIONS

80. A Brief Survey of Nepal's Trade With British India During the Latter Half of the 19th Century. K.K. Adhikari, 2(1), Feb. 75, p. 187-196.
81. Gate-Way-Hinter Relations in Changing Nepal. D.A. Messerschmidt, 8(1), Dec. 80, p. 21-48.
82. Nepal and South Asia. T. Manandhar, 2(1), Feb. 75, p. 119-122.

Press

83. The Press in Nepal (1951-75), L.R. Baral, 2(1), Feb. 75, p. 169-186.

Revenue

84. Mallakara in its Economic and Historical Perspective. D.C. Shrestha, 5(2), June 78, p. 1-6.
85. A Study in Revenue Collection System in Nepal: 1846-1923. J. Karkey, 9(1 & 2), Dec. 81, p. 55-64.

364 CRIMES & CRIMINALS

86. Criminal Cases and Their Punishments Before and During the Period of Jang Bahadur. K.K. Adhikari, 3(1), Jan. 76, p. 105-116.

370 EDUCATION

87. Educational Aspirations and Expectations of Rural Youths in Rautahat District of Nepal. K.D. Upadhyay, 11(2), Apr. 84, p. 37-48.
88. The Medium Question in Nepalese Higher Education. S. Subba, 7(1 & 2), Dec. 79 & June 80, p. 71-96.
89. Patterns of Education and Literacy in Village Panchayat of Central Nepal. T. Ragsdale, 2(1), Feb. 75, p. 19-38.
90. Rote Learning in Nepalese Public Schools. S.K. Nillion, 5(1), Dec. 77, p. 55-70.

380 COMMERCE

91. Adaptation to a Changing Salt Trade: The View from Humla, J.L. Rose, 10(1, 2), Dec. 82 & June 83, p. 43-50.
92. A Brief Survey of Nepal's Trade with British India During the Latter Half of the 19th Century. K.K. Adhikari, 2(1), Feb. 75, p. 187-196.
93. The Byanshi: An Ethnographic Note in a Trading Group in Far Western Nepal. A.E. Manzardo et al, 3(2), Sept. 76, p. 84-118.
94. Ecological Constraints on Trans-Himalayan Trade in Nepal. A.E. Manzardo, 4(2), June 77, p. 63-81.
95. Household Organization Among Newar Traders. D. Quigley, 12(2), Apr. 85, p. 13-44.

Mass Communication

96. Mass-Media Tradition and Change: An Overview of Change in Nepal.
B.C. Malla, 10(1 & 2), Dec. 82, p. 69-80.

390 SOCIAL CUSTOMS

97. Funeral Observations of a Group of Non-ascetic Sunyasi in Central Nepal. V. Bouillier, 3(2), Sept. 76, p. 36-45.
98. Gwaye Da Tayegu: An Initial Ritual of the Samyaka Guthi. S.K. Tuladhar, 7(1 & 2), Dec. 79, p. 47-70.
99. Jako: A Newar Family Ceremony. G. Toffin, 2(1), Feb. 75, p. 47-56.
100. Newar Buddhist Initiation Rites. K. Loke, 2(2), June 75, p. 1-23.
101. A Note on the Nepalese Satar Festivals of Soharai and Patamela.
P. Ghimire, 7(1 & 2), Dec. 79, p. 9-20.
102. Sitting in a Cave: An Analysis of Ritual Seclusion at Menarche
Among Brahman and Chhetris in Nepal. L. Bennett, 6(1), Dec.
78, p. 31-46.

400 LINGUISTICS

103. Linguistics and Development in Nepal. L. Troyer, 1(2), June 74,
p. 107-118.
104. Reduplication in Bantawa. N.K. Rai, 12(1), Dec. 84, p. 15-22.
105. English as a Second Language/English as a Foreign Language Distinc-
tion: Its Pedagogy and the Nepalese Context. R. Shrestha,
11(1), Dec. 83, p. 45-59.
106. Textual Structure in English and How the Nepali Learners Handle it.
A. Subedi, 9(1 & 2), Dec. 81, p. 21-30.
107. An Error Analysis of Nepali Learners of English. A. Shrestha,
11(3), Aug. 84, p. 11-30.
108. Error Analysis: A Pragmatic Approach. A. Shrestha, 6(2), June 79,
p. 1-10.
109. Acoustic Analysis of the Maithali. R. Yadav, 4(1), Dec. 76, p. 77-
91.
111. The Influence of Aspiration of Vowel Duration in Maithali. R. Yadav,
7(1 & 2), Dec. 79 & June 80, p. 1-8.
112. Some Stress Placement Rules in Maithali. R. Yadav, 8(1), Dec. 80,
p. 181-188.

113. The Word Order Phenomenon in Maithali Simple Sentences: A TG Approach. Y.P. Yadav, 12(1), Dec. 84, p. 1-14.
114. Dative Subject Constructions in Hindu, Nepali and Marathi and Relational Grammar. S.M. Gupta & J. Tuladhar, 7(1 & 2), Dec. 79, p. 119-154.
115. Testing Nepali as a Second Language. N.M. Tuladhar & S.K. Tuladhar, 6(2), June 79, p. 11-20.
116. Is Newari a Classifier Language? A. Hale and I. Shresthacharya, 1(1), Dec. 73, p. 1-21.
117. Newari Language and Linguistics: Conspectus. T.R. Kansakar, 8(2), June 81, p. 1-18.
118. Rhythm and Intonation in Colloquial Newari. T.R. Kansakar, 5(1), Dec. 77, p. 1-14.
119. Some Type of Reduplication in the Newari Verb Phrases. I. Shresthacharya, 3(1), Jan. 76, p. 117-127.

580 BOTANY

120. Research Note: Contribution to Ellinobotany of the Palpa Area. P. Shrestha, 12(2), April 85, p. 63-74.

610 HEALTH & MEDICINE

121. Breast Feeding in Nepal: Religious and Culture Beliefs. S. Paneru, 8(2), June 81, p. 43-54.
122. Concepts of Illness and Curing in a Central Nepal Village. L. Stone, 3(sp), June 76, p. 58-80.
123. Health Services and Some Cultural Factors in Eastern Nepal. C.J. Wake, 3(sp), June 76, p. 113-126.
124. Illness Interpretation and Modes of Treatment in Kirtipur. P.L. Devkota, 11(2), Apr. 84, p. 11-20.
125. Levels of Medicine in a Central Nepali Village. H.S. Blustain, 3(sp), June 76, p. 83-105.

Shamanism

126. Notes on Two Shaman-Curers in Kathmandu. F.E. Okada, 3(sp), June 76, p. 107-112.
127. Shamanism and Medicine in Developing Nepal. L.G. Peters, 6(2), June 79, p. 27-44.

128. Siberian Shamanistic Traditions Among the Kham Magar of Nepal. D. Watters, 2(2), Feb. 75, p. 123-168.

129. Social Structure, Fertility and the Value of Children in North Western Nepal. N.E. Levine, 9(1&2), Dec. 81, p. 1-20.

630 AGRICULTURE

636 ANIMAL HUSBANDRY

130. Animal Husbandry in the Ganesh Himel Region: An Essay to Ecological Synthesis. P. Alirol, 3(1), Jan. 76, p. 47-61.

131. Survey Report: Herding and Socio-Economic Change Among Langtang Tibetans. T. Cox, 12(3), Aug. 85, p. 63-74.

700 FINE ARTS

132. The Iconography of Chiwong Gomba. K.S. March, 5(1), Dec. 77, p. 85-92.

133. Image Casting in Oku Bahal. I. Alsop and D. Charlton, 1(1), Dec. 73, p. 22-49.

134. Problems in Dating Nepalese Metal Sculpture: There Images of Vishnu. I. Alsop, 12(1), Dec. 84, p. 23-60.

135. The Saugal-Tol Temple of Patan Further Note on the Shrine and its Sculpture. M.S. Slusser, 2(1), Feb. 75, p. 39-45.

900 HISTORY

136. Annals of Prithvinarayan Shah in Contemporary Sanskrit Literature. K.C. Mishra, 10(1&2), Dec. 82 & June 83, p. 51-56.

137. Archaeological Remains of Lumbini: The Birthplace of Lord Buddha. R.N. Pande, 12(3), Aug. 85, p. 51-62.

138. A Brief Survey of Nepal's Trade with British India During the Latter Half of the 19th Century. K.K. Adhikari, 2(1), Feb. 75, p. 187-196.

139. A Brief Survey of the Organization and Structure of Nepali Law Courts During the Third Quarter of the 19th Century. K.K. Adhikari, 6(2), June 79, p. 11-20.

140. Death of Dharmadev. T.R. Vaidya, 8(2), June 81, p. 35-42.

141. The Daudaha (Inspection Tour System) Under the Ranas. D.W. Edwards, 3(2), Sept. 76, p. 7-34.

86 CNAS Journal, Vol. 13, No. 3 (August 1985)

142. The Early History of Lo (Mustang) and Ngari. D.P. Jackson, 4(1), Dec. 76, p. 39-56.
143. How Jang Bahadur Established Rana Rule in Nepal Madhav Raj Pandey. 1(1), Dec. 73, p. 50-63.
144. King Hangshu Dewa and His Minister Wokde. I.S. Chemjong, 2(2), June 75, p. 117-136.
145. A Leaf from the Bendal "Vamsavali" 1. T.L. Manandhar, 1(2), June 74, p. 99-102.
146. Nepal on the Eve of the Rana Ascendancy. D.W. Edwards, 2(1), Feb. 75, p. 99-118.
147. Preliminary Notes on the Nature of Rana Law and Government. M.C. Regmi, 2(2), June 75, p. 103-115.
148. Prithvinarayan's Relation with Chaubisi Principalities 1952-66. L.S. Baral, 11(3), Aug. 84, p. 21-46.
149. The Role of Fear in the Unification of Nepal. L.F. Stiller, 1(2), June 74, p. 42-89.
150. Some Questions on Nepali History. M.C. Regmi, 3(2), Sept. 76, p. 1-5.
151. The Status, Powers and Functions of Rajas and Rajautas During the 19th Century Nepal in the Light of Contemporary Documents. K.K. Adhikari, 8(1), Dec. 80, p. 147-156.

954 HIMALAYAN STUDIES

152. Adaptation to a Changing Salt Trade: The View from Humla. J.L. Ross, 11(1&2), Dec. 82 & June 83, p. 43-50.
153. Ages at Menopause and Menarche in a High Altitude Himalayan Population, 9(1&2), Dec. 81 & June 82, p. 49-54.
154. Animal Husbandry in the Ganesh Himal Region: An Essay in Ecological Synthesis. P. Alirol, 3(1), Jan. 76, p. 47-61.
155. The Ban Rajas - A Vanishing Himalayan Tribe. J. Reinhard, 4(1), Dec. 76, p. 1-22.
156. Ecological Constraints on Trans-Himalayan Trade in Nepal. A.E. Manzardo, 4(2), June 77, p. 63-81.
157. The Effect of High Altitude on Fecundity & Fertility in the Himalayas: Myths & Realities. M.C. Goldstein and C.M. Beall, 10(1&2), Dec. 82, p. 21-42.

158. Herding and Socio-Economic Change Among Langtang Tibetans. T. Cox, 12(3), Aug. 85, p.
159. High Altitude Animal Husbandry and the Thakalis of Thak Kholā: Biology and Trade in the Himalayas. A.E. Manzardo, 11(2), Apr. 84, p. 21-36.
160. Making a Living in the Nepal Himalayas: The Case of the Thakalis of Mustang District. M. Vinding, 12(1), Dec. 84, p. 51-106.
161. Preliminary Report on Langtang Region. R. Hall, 5(2), June 78, p. 51-68.
162. Preliminary Research Report on Anthropological Explorations of the Eastern Himalayas. B.N. Aziz, 5(1), Dec. 77, p. 45-53.
163. A Report on Limi Panchayat: Humla District, Karnali Zone. M.C. Goldstein, 5(2), June 75, p. 89-101.
164. Report on the University of California Expedition to Kutang and Nurbi in Northern Nepal in Autumn 1973. M. Aris, 2(2), June 75, p. 45-87.
165. Yaks, Cows and Status in the Himalayas. S. Schular, 6(2), June 79, p. 65-72.

ALPHABETICAL INDEX
BY AUTHORS OF ARTICLES & BOOK REVIEWS

Adhikari, K.K.

A Brief Survey of Nepal's Trade with British India During the Latter Half of the 19th Century. 2(1), 187-196.

A Brief Survey of the Organization and Structure of Nepali Law Courts During the 3rd Quarter of the 19th Century. 6(2): 11-20.

Criminal Cases and Their Punishment Before and During the Period of Jang Bahadur. 3(1): 105-116.

The Status, Powers and Functions of Rajas and Rajautas During the 19th Century Nepal in the Light of Contemporary Documents. 8(1): 147-180.

Alsop, I.

Problems in Dating Nepalese Metal Sculpture: Three Images of Vishnu. 12(1): 23-60.

Review of K.P. Malla's Classical Newari Literature a Sketch. 9(1-2): 83-86.

Alsop, I. and J. Charlton

Image Casting in Oku Bahal. 1(1): 22-49.

Amatya, P.P.

Contributions to Nepalese Studies: Cumulative Index 1973-1985 by Theme and Author. 12(3): 75-105.

Andore, E.

The Rodighar and Its Role in Gurung Society. 1(2): 10-24.

Antweiler, C.

Tamang Settlement and Subsistence Economy Observations in an Eastern Nepalese Villages (Sindhupalchowk). 11(3): 99-120.

Aris, M.

Report on the University of California Expedition to Kutang and Nubri in Northern Nepal in Autumn 1973. 2(2): 45-87.

Asthana, H.S., jt. auth.

A Cross Cultural Study of Nepalese and Indian Optimism. 8(2): 83-96.

Aziz, B.N.

Preliminary Research Report on Anthropological Explorations of the Eastern Himalayas. 5(1): 45-53.

Review of B. Coburn's Nepali Aama. 10(1-2): 127-130.

- Baral, L.R.
The Press in Nepal (1951-75). 2(1): 169-186.
- Baral, L.S.
Prithvinarayan's Relations with Chaubisi Principalities 1752-66.
11(3): 21-46.
- Beall, C.M.
Ages at Menopause and Menarche in a High Altitude Himalayan Population. 9(1&2): 49-54.
- Beall, C.M., jt. auth.
The Effect of High Altitude Fecundity and Fertility in the Himalayas: Myths and Realities. 10(1-2): 21-42.
- Growing Old in Helambu: Aging Migration and Family Structure Among Sherpas. 8(1): 41-56.
- Bennett, L.
Sex and Motherhood Among the Brahmins and Chhetris of East-Central Nepal. 3(sp): 1-52.
- Sitting in a Cave: An Analysis of Ritual Seclusion at Menarche Among Brahmins and Chhetris in Nepal. 6(1): 31-46.
- Bhattachan, K.B. and M. Vinding
An Annotated Bibliography on the Thakalis. 12(3): 1-23.
- Bhurteel, S.
Rev. of P.R. Uprety's Nepal, a Small Nation in the Vortex of International Conflicts. 12(2): 117-120.
- Bista, D.B.
Nepalis in Tibet. B(1): 1-20.
- Padipur: A Central Terai Village. 3(1): 1-32.
- Blustain, H.S.
Levels of Medicine in a Central Nepali Village. 3(sp): 83-105.
- Borqstron, B.E.
Kitini Gaon Panchayat. 1(2): 1-9.
- Bouillier, V.
Economic Relationships Between Occupational Castes and High Castes in Central Nepal. 4(2): 99-110.
- Funeral Observances of a Group of Non-ascetic Sannyasi in Central Nepal. 3(2): 36-45.
- Burghart, R.
Bairag Mandals. 3(1): 63-104.

90. CNAS Journal, Vol. 13, No. 3 (August 1985)

The Role of Kinship in the Formation of Janakpurdham Pilgrim Groups.
2(1): 71-90.

Campbell, J.G.

Rev. of Spirit Possession in Nepal Himalayas. 3(2): 118-127.

Charlton, J., jt. auth.

Image Casting in Oku Bahal. 1(1): 24-49.

Chemjong, I.S.

The Book of Lepcha Belief or Wanism. 2(2): 137-144.

King Hangshu Dewa and His Minister Wokde. 2(2): 47-136.

Clars, G.C., M.M. Crowley and B.N. de los Reyes

First Annual Progress Report on Nepal's Small Farmer's Project.
5(2): 69-86.

Cox, T.

Survey Report: Herding and Socio-Economic Change Among Langtang
Tibetans. 12(3): 63-74.

Crowley, M.M., jt. auth.

First Annual Progress Report on Nepal's Small Farmers Project.
5(2): 69-86.

Dahal, B.M. and S. Subba

Rev. of K.P. Malla's Language in Nepal in Perspective. 1(2):
121-125.

Dahal, D.R.

The Concept of Economy in a Peasant Society: Case Study of the
Athpahariya Rais in East Nepal. 8(2): 55-72.

Economic Development Through Indigenous Means: A Case of Indian
Migration in the Nepal Terai. 11(1): 1-20.

Rev. of Ascetism and Eroticism in the Mythology of Siva. 3(1):
137-139.

Rev. of L. Caplan's Land and Social Change in East Nepal. 1(1):
111-112.

Rev. of P. Caplan's Priests and Cobblers. 2(1): 200-203.

Dahal, D.R., jt. auth.

The Byanshi: An Ethnographic Note on a Trading Group in Far Western
Nepal. 3(2): 84-118.

Devkota, P.L.

Illness Interpretation and Modes of Treatment in Kirtipur. 11(2):
11-20.

- Dhungel, B.
Labour Participation and Fertility of Rural Women in Nepal. 8(2): 73-82.
- Dhungel, R.
The Concept of Asta Mangals in Tibetan Culture. 12(2): 45-54.
- Doherty, V.S.
The Organizing Principles of Brahmin Chhetri Kinship. 1(2): 25-41.
- Edwards, D.W.
The Daudaha (Inspection System Under the Ranas). 3(2): 7-34.

Nepal on the Eve of the Rana Ascendancy. 2(1): 99-118.
- Euler, C.
Changing Patterns of a Subsistant Economy. 11(3): 63-98.
- Fricke, T.E.
Fertility and Its Proximate Determinants in a Tamang Village of North Central Nepal. 12(3): 25-49.
- Gellner, David N.
Rev. of Panauti Une Ville an Nepal. 12(1): Dec. 84, p. 115-126.
- Ghimire, P.
A Note on the Nepalese Satar Festivals of Soharai and Patamela. 7(1&2): 9-20..
- Goldstein, M.C.
Population, Social Structure and Strategic Behaviour: 4(2): 47-62.

Preliminary Notes on Marriage and Kinship Among the Sherpa of Helambu. 2(1): 57-69.

A Report on Limi Panchayat, Humla District Narnali Zone. 2(2): 1975, 69-101.
- Goldstein, M.C. and C.M. Beall
The Effect of High Altitude on Fecundity and Fertility in the Himalayas: Myths and Realities. 10(1&2): 21-42.

Growing Old in Helambu: Aging Migration and Family Structure Among Sherpas. 8(1): 41-56.
- Gubhaju, B.B.
Sex Differences in Infant and Child Mortality in Rural Nepal. 12(1): 107-114.

- Gupta, S.M. and J. Tuladhar
Dative Subject Constructions in Hindi, Nepali and Marathi and
Relational Grammar. 7(1&2): 119-154.
- Hale, A. & I. Shresthacharya
Is Newari a Classifier Language ? 1(1): 1-21.
- Hall, A.R.
Preliminary Report on Langtang Region. 5(2): 51-68.
- Ishii, H.
Recent Economic Change in a Newar Village. 8(1): 157-188.
- Iltis, L.C.
An Ethnohistorical Study of Bandipur. 8(1): 81-146.
- Jackson, D.P.
The Early History of Lo (Mustang) and Ngari. 4(1): 39-56.
- Jest, C.
The Ankhu Khola Valley: An Introduction to a Multi Disciplinary
Resources Programme in Nepal. 3(1): 33.

The Kuswar of Chaithali (Central Nepal). 4(2): 1-45.
- Jha, S.K.
Acoustic Analysis of the Maithili Diphthongs. 12(2): 1-12.
- Kansakar, T.R.
Newari Language and Linguistics: A Conspectus. 8(2): 1-18.

Rhythm and Intonation in Colloquial Newari. 5(1): 1-14.
Rev. of K.P. Malla's The Newari Language: A Working Outline.
12(3): 141-143.
- V.B.S.
Indo-Nepal Migrations Problems and Prospects. 11(2): 49-70.
- Karki, J.
A Study in Revenue Collection System in Nepal: 1846-1923.
9(1&2): 55-64.
- Y.B.
Family Type and Fertility in Rural Nepal. 11(3): 47-62.
- Khanal, Y.N.
Rev. of S.D. Muni's ed. Nepali: Assertive Monarchy. 4(2): 136-
144.
- Levine, N.E.
The Origins of STod-pa: A Nyinba Clan Legend. 4(1): 57-75.

Social Structure Fertility and the Value of Children in North-
western Nepal. 9(1&2): 1-20.

Locke, J.K.

Newar Buddhist Initiation Rites. 2(2): 1-23.

Macdonald, A.W.

Rev. of C. Von. Furer-Haimendorf's Contributions to the Anthropology of Nepal. 2(2): 185-187.

Rev. of S.G. Karmay's the Treasury of Good Saying. 1(1): 106-108.

Rev. of S.G. Karmay's Worship of the Goddess According to the Kalika-purana. 1(1): 108-110.

Rev. of Loenhard's Navarigitinanjari Religious and Secular Poetry of the Newars of the Kathmandu Valley. 2(1): 197-200.

Mainali, K., jt. auth.

A Brief Profile of the Chirimar People of Belaspur Village, Banke. 5(1): 41-44.

Malla, B.C.

Mass-Media Tradition and Change (An Overview of Change in Nepal). 10(1&2): 69-80.

Malla, K.P.

Rev. of Petech's Medieval History of Nepal. 2nd ed. 12(2): 121-136.

River-Names of the Nepal Valley: A Study in Cultural Annexation. 10(1&2): 57-68.

Malla, K.P.

Nepal Vamsavali: A Complete Version of the Kaisher Vamsavali. 12(2): 75-102.

Malla, K.P.

Rev. of M.S. Slusser's Nepal Mandala: A Cultural Study of the Kathmandu Valley. 11(1): 125-133.

Manandhar, T.L.

Nepal and South India. 2(1): 119-122.

ed.

— A Leaf from the Bendall "Vamsavali". 1(2): 92-103.

Manzardo, A.E.

Ecological Constraints on Trans-Himalayan Trade in Nepal. 4(2): 63-81.

High Altitude Animal Husbandry and the Thakalis of Thak Khola: Biology and Trade in the Himalayas. 11(2): 21-36.

Rev. of Himalayan Traders Life in Highland Nepal. 3(1): 140-142.

Rev. of Objects et Mondus L'Homme et la Haute Montagne: l'Himalaya-
Tome xiv. 3(1): 143.

Manzardo, A.E., D.A. Dahal and N.K. Rai
The Byanshi: An Ethnographic Note on a Trading Group in Far Eastern
Nepal. 3(2): 84-118.

Manzardo, A.E. and K.P. Sharma
Cost-Cutting, Caste and Community: A Look at Thakali Social Reform
in Pokhara. 2(2): 25-44.

March, K.S.
The Iconography of Chiwang Gomba. 5(1): 85-92.

Of People and Yaks: The Management and Meaning of High Altitude
Hearding Among Contemporary Solu Sherpas. 4(2): 83-97.

Messerschmidt, D.A.
Gateway-Hinter Relations in Changing Nepal. 8(1): 21-40.

Miller, K.J.
Decision-Making Among Farmer Families. 8(2): 19-34.

Milliom, S.K.
Rote Learning in Nepalese Public Schools. 5(1): 55-70.

Mishra, C.
Political Economy of Population Redistribution: A Case Study of a
Dang Village. 11(3): 1-10.

Social Research in Nepal: A Critique and A Proposal. 11(2): 1-10.

Rev. of Blakie, Cameron and Seddon's Nepal in Crisis: Growth and
Stagnation at the Periphery. 8(1): 223-228.

Rev. of M.C. Regmi's the State and Economic Surplus, Production,
Trade and Resource Mobilization in Early 19th Century Nepal.
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अभिलेखहरू, १७, १८, २३, २४, २७

इतिहास, नेपाल, १४-४०

कर व्यवस्था, ८

कणाली इतिहास, १४, १५

कल्याण सिंह, २५

कीर्तिम मल्ल, १७

सम्वा, ३

गीवाणि युद्ध विक्रम शाह, ३५

गुल्मी राज्य, १८

चाँगु, ६

जंग बहादुर, ५

जयकृष्ण जोशी, २०

ताम्रपत्र, २०, २१, २२, २५, ३५

देवदासी प्रथा, २

नेपाल-इतिहास, १४-४०

पश्चिम नेपाल, २३

पुरातत्त्व, ३२

पृथ्वीनारायण शाह, १०

प्रताप मल्ल, १३

बफाडो अभिलेख, २४

बफाङ्गी राजा, २५

विक्रमशील महाविहार, ११

विदेश नीति, ४-५

मल्लकर, २६

मल्ल राजाहरू, १७, १८

माढी दरवार, ३७

मुद्रा, १२

मूर्तिकला, ६

यंगल यम्बु, ३०

युक्लाथुप, ४, ६

रणमीम शाह, ३८

राज्याभिर्णोक, ३१

शिवदेव, २८

सरस्वती, जनजीवनमा, १

सत्यानी राजा, ३८ ।

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अनुवर्ग सूची

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Resource Management in the Arid Himalaya: Problems and Prospective
Solutions

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MUSTANG

Geographical Description

The administrative district of Mustang is located in northern Nepal between $83^{\circ}28'3''$ and $84^{\circ}08'11''$ east longitude and $28^{\circ}33'36''$ and $29^{\circ}19'$ north latitude. It is bordered by the Tibetan Autonomous Region of China to the north, the Myagdi district to the south, Manang district to the east and Dolpo district to the west (Fig. 1). The district covers an area of some 3,176 square kilometers and is drained by numerous tributaries in the north which merge to form the Mustang River (Chu, T.). Additional tributaries flowing into the Mustang River form the Kali Gandaki, with its strikingly broad alluvial plain between the villages of Lete and Chhelegaon, has been a traditional trade route between Tibet and India for hundreds of years.

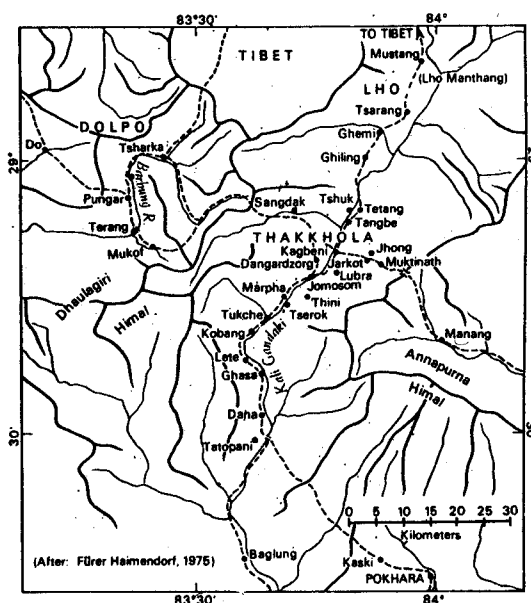


Figure 1. Eastern Dolpo and Mustang Districts, West Nepal

Mustang is located in the Trans-Himalayan arid zone, an expanse of barren country screened from the summer monsoon rains by the Dhaulagiri and Annapurna massifs at the south. These mountains "form the boundary between the Indian subcontinent and the high plateaus of central Asia," and have been described as "one of the most rigid climatic barriers in the world" (Nelson et al., 1980:10). Rainfall varies from 3,470 mm/yr on the southern slopes (Pokhara) to less than 300 mm/yr north of the chain. The district may be further divided into two fundamental physiographic regions--an extension of the Tibetan plateau to the north (Upper Mustang), and an exceptionally deep Inner Valley region, which separates the Annapurna and Dhaulagiri massifs, in the south (Lower Mustang) (see: Nelson et al., 1980).

Upper Mustang, also called Lho Manthang or Mustangbhot, is generally referred to as the region between Kagbeni and the district's northernmost border with Tibet. It is synoptically a large, open valley drained by the Kali Gandaki and enclosed by high mountains, with the average elevation above 3,000 m and highest peaks in excess of 7,500 m. Upper Mustang is an "almost treeless country which in climate and vegetation is Tibetan in character" (Stainton, 1972:49). Rainfall is less than 300 mm/yr. Sod grasses and steppe shrubs predominate (Sophora-Oxytropis as a stream-side community; Caragana-Artemisia on the lower slopes; and Caragana-Lonicera on the upper slopes) except for occasional enclaves of pine, birch, cedar/cypress or juniper on the north-facing slopes of certain tributaries (Dobremez and Jest, 1970). Three distinct physiographic units have been defined for the region. They are the rounded hills, dissected plateaus and lowland complexes of the "Upper Mustang Valley Land System"; the higher grasslands, smooth ridgelines and alluvial fill terraces of the "Western Mustang Valley Land System"; and the upper hills, benchlands, flood plains and terraces of the "Lower Mustang Valley Land System" (Nelson et al., 1980).

Because of its proximity to Tibet, Lho is "culturally, linguistically and ethnically...purely Tibetan" (Fürer Haimendorf, 1975:137), and "one of the last strongholds of Tibetan culture in Nepal" (Nelson et al., 1980:19). The region is sparsely settled by the Lopa, a Tibetan-like people engaged in trade (salt and wool for the cereal grains of the south), agriculture (barley, wheat, buckwheat and potatoes), and animal husbandry (yaks, yak hybrids and goats). Villages lie between 3,050 and 3,660 m and are usually located along the Kali Gandaki or its major tributaries. Houses are built of rammed earth, with the flat, mud-covered roofs supported by poles from the coppiced poplar or willow trees which grow along the irrigation canals. Likewise, agriculture is limited to those areas which can be irrigated, and villages appear as oases in an otherwise barren and eroded landscape.

This region has one of the lowest population densities in Nepal (less than 8 per km²) but a high density per cropland area (approximately 16/ha). The major population concentration is at the walled city of Mustang (Lho Manthang). The ruins of old forts and villages throughout Lho suggest that population densities were much higher in the past. The

decline of the Kali Gandaki as a major trade route, the short growing season, harsh climate and lack of natural resources makes Lho an extremely difficult place in which to live (Bista, 1980).

Until the Gorkha conquest of Nepal in the 18th century, Lho was a relatively powerful mountain kingdom, one of the many "scattered over the more fertile parts of this higher Himalayan region" (Snellgrove, 1979:75). Until 1951 it remained a "separate principality, ruled by the Raja of Mustang" (Fürer-Haimendorf, 1975:137). This hereditary title is still recognized in an honorary sense by His Majesty's Government, henceforth referred to as HMG, and the present Raja continues to exert considerable political and social influence over the region's inhabitants (see: Vinding, 1978; Jackson, 1977, 1978; Fürer-Haimendorf, 1975, 1981; and Snellgrove, 1979, for discussions of Lho's early history).

Lower Mustang, also known as Thak Khola, generally refers to the region between Jomsom and Ghasa (the Baragaon region, a cultural and ecological "transition zone" between Kagbeni and Jomsom, will be discussed shortly). The major physiographic units defined for this region are the Alpine Highlands and the Inner Valley Land Systems (Nelson et al., 1980). It is within this region that the Kali Gandaki River separates the Annapurna and Dhaulagiri massifs, forming a very deep gap between the two 8,000 m+ peaks. At the bottom of the gorge is the broad alluvial plain of the Kali Gandaki, ranging in width from 2,500 m to 3,500 m between Lete and Chhelegaon. Daily winds funnel northward with velocities often averaging 50 kph.¹ The winds have a severe drying effect on the valley floor and permit only the growth of a Sophora-Oxytropis steppe formation. In contrast to Upper Mustang, however, the slopes on either side of the valley floor are well forested to an area just south and east of Jomsom, as most regions receive between 1,300 to 2,500 mm of precipitation per year. Precipitation values generally decrease as the head of this inner valley is approached. Climate and vegetation change dramatically and range from the subtropical monsoon flora below Ghasa, through the temperate forests of pine (Pinus excelsa), fir (Abies spectabilis), and cedar (Cupressus torulosa) through Tuckche to the windblasted shrubs (Sophora morcroftiana, Lonicera hypoleuca, Caragana spp.) and barren hills of Jomsom (Stainton, 1972). With increasing altitude above from the valley floor a fir-birch (Abies spectabilis/Betula utilis) and rhododendron (Rhododendron campanulatum) formation is usually encountered, followed by the alpine meadows and snow-covered summits of the High Himal.

"Thak Khola" refers to the "river valley inhabited or dominated by the Thak (Thakali) people" (Jackson, 1978:191) and is made up of the Baragaon, Paanchgaon and Thaksatsae regions. The Thakali people, "though at one time drawn into the Tibetan cultural orbit," are not of Tibetan origin, but more likely part of an ethnic group which included such tribes as Tamangs, Gurungs and Magars (Fürer-Haimendorf, 1975:134).

As in Lho, the ruins of numerous old forts throughout Thak Khola point to a time when it was a separate kingdom or group of smaller principalities (see: Fürer-Haimendorf, 1981). The year 1869 marks the

beginning of the Subba period, when leading families were granted a lucrative trade monopoly on all incoming grain and salt (Messerschmidt and Gurung, 1974). This lasted until 1928, although the Thakalis have since continued to be leaders in the business/trade sectors. Frequent travel and a desire to gain acceptance into Hindu society also led to their "gradual abandonment of many of the customs and habits which they had shared with Bhote (Tibetan) populations" (Fürer-Haimendorf, 1978: 145). While no doubt affected by the trade restrictions imposed by China in the 1950's, they have since supplemented their business and agriculture incomes by developing the tourism and horticulture industries. While architecture, animal husbandry, agriculture practices and life-styles are similar to those found in Lho, Thak is a much wealthier and more sophisticated region with a comparative abundance of natural resources. Thak Khola has also been a center for recent developmental activities, including the many land-use components of HMG's Resource Conservation and Utilization Project (RCUP), a 260 kw mini-hydro plant near Tukche, and the Agricultural Farm near Marpha.

Baragaon and the Muktinath Valley

The Baragaon region is located in the central part of Mustang District at approximately 28°06' east longitude. It spans four political units known as panchayats² (Muktinath, Jhong, Kagbeni, Chhusang) and lies within the "Lower Mustang Valley Land System" previously mentioned. Landforms consist primarily of rounded, barren hills which enclose the benchlands, terraces and rubbly plains of the Kali Gandaki. The 19 villages of Baragaon³ are inhabited by a people normally referred to as the "Baragaonle," a Tibetan-like people more similar to the Lopa of Upper Mustang than to the Thakali (Schuler, 1981). Markedly influenced by the Thakali, however, the Baragaonle and Baragaon region may be said to represent a "transition zone" between Upper and Lower Mustang.

On the extreme eastern edge of the Baragaon region, at approximately 29°11' north longitude and 83°53' east latitude, lies a high basin within the hills known as the Muktinath Valley. It is aligned east-west and is drained by the Jhong (Dzong) Khola, a tributary of the Kali Gandaki. Six villages (Khingar, Jarkot, Purang, Chongkhor, Jhong and Putra) are located in the central and eastern part of the valley and range in elevation from 3,050 to 3,810 m. The Jhong Khola is the dividing line for the valley's two panchayats, Muktinath and Jhong. A seventh village, Lubra, is located in the Punda Khola valley (Muktinath panchayat) which lies adjacent to and south of the Jhong. Lubra is included in this particular study group because of its proximity to and use of local forest reserves. Kagbeni, at the junction of the Kali Gandaki and Jhong Khola, has been excluded because of its access to different forest regions further up the Kali Gandaki.

A six-hour walk or three-hour horse ride from the administrative center of Jomsom is required to reach this central part of the valley. The walk takes one along the twisted, wind-swept plain of the Kali Gandaki and begins to gain in elevation near the village of Kagbeni.

During this approach there is little to distinguish the mouth and adjacent regions of the Muktinath valley from the surrounding countryside. Both the north- and south-facing slopes exhibit a Caragana-Artemisia steppe formation spread unevenly over the hills of black, slaty soils. The south-facing slopes, however, appear steeper and more heavily eroded, with yellowish pillars of cave-pitted sediments rising hundreds of feet from the banks of the Jhong Khola. One deserted village near this area is passed, which shows evidence of heavy landslide activity forcing the inhabitants to leave at some time in the near past.

The six villages of the Muktinath and Jhong panchayats, soon in full view from a hill two hours east from Kagbeni, quite drastically change the character of the land wherever they happen to be located. Each appears as an oasis of terraced, irrigated fields surrounding the clustered groups of flat-roofed, white-washed adobe houses (Plate 1). Barley, wheat



Plate 1: Alluvial plain of the Ponda Khola, en-route to Lubra.

and buckwheat are the principal crops and can be grown only on irrigated land. Poplar (Populus ciliata) and willow (Salix spp.) trees grow in and about the villages, along the irrigation canals, and around the Muktinath temple (mandir, N.) and monastery (gomba, T.). The valley receives 369 mm of rainfall per year, which is slightly more than the nearby Jomsom, and can be attributed to the valley's higher elevation and greater distance from the drying winds of the Kali Gandaki. Although this upper part of the valley is characterized by a Caragana brevispina-Lonicera spinosa steppe formation (Dobremez and Jest, 1976), it should be noted that the north-facing slopes are moister and exhibit a more continuous cover of vegetation than do the drier, heavily eroded south-facing slopes.

The population of the valley (including Lupra, with a population of 87) is approximately 1,404 (APROSC, 1983). The Baragaonle speak a dialect of Tibetan and are followers of Tibetan Buddhism and Bon religion. There are 12 monasteries in the valley as well as the Hindu shrine complex and pilgrimage site of Muktinath for which the valley is famous. The Baragaonle are agro-pastoralists and graze their herds of yak, dzo (yak/cattle hybrid) and goats on the valley slopes and in the higher alpine meadows of the Punda Khola. Because of the short growing season in this high valley, the people depend on various other sources of income which include trade, employment outside of the region, the production of handicrafts and tourism (Schuler, 1981).

As do most Himalayan peoples, the inhabitants of Muktinath utilize wood for heating, cooking and constructional purposes. Kindling is often found neatly stacked on the outer edges of roof-tops or in sheltered areas and is conservatively burned in the cooking stoves (chulo, N.). Vertical and horizontal beams of de-barked or hand-squared lumber support barns and houses. Access to a continual supply of wood products is critical to survival, as there are no feasible sources of alternative energy at present. With minor exceptions, however, the species most frequently utilized for the above purposes are nowhere to be seen in the valley. This prospect led to an examination of (1) the species used, (2) the timber and fuelwood requirements, (3) forest locations, and (4) present management practices.

WOOD

Fuelwood

Within the study area, birch (Betula utilis) is the most common species used for cooking and heating. It is considered superior to other species as it burns more cleanly, more slowly and with a higher heat output than pine or juniper. The branches of scrub juniper (Juniperus indica) are used for kindling. During the winter, dung cakes supplement wood stores, and dried thorn bushes mixed with dung are also burned at this time.

The average household is said to burn a yearly average of seven ser (approximately 8 kg) of wood a day, a figure which cannot be verified at this time. It is, however, a fairly low estimate when compared to those given for other regions of Nepal (Donovan, 1980) and probably reflects the relative scarcity of fuelwood in Baragaon and the conservative burning methods employed. It does not include the additional amounts required by tourist groups, tourist hotels and pilgrim populations, which will be discussed shortly. Likewise, it is not known exactly how much dung is burned each year, except to say that its usage in Baragaon, Mustang and Dolpo is much heavier than in the rest of Nepal for the same wood scarcity reasons.

Fuelwood is burned in the cooking stoves which are constructed of rock and mud and usually contain two cooking holes. Thak Khola is unusual in that it is one of the only places in Nepal where chimneys and form-fitting pot-holes (sheet metal cut-outs) are used. The resultant "smokeless chulo" (see: Saubolle, 1979; RECAST, 1980), which has received considerable attention from international donor agencies in Nepal due to its health and alleged fuel conservation benefits, is said to have been introduced by the Khamba, Tibetan militants based in Mustang who fought the Chinese during the 1960's. The Khamba, who will be discussed in greater detail shortly, are also reported to have introduced the sheet metal stoves and pipes used for heating purposes during the winter. Both types of stoves are now found throughout Thak Khola.

Families often group together to form wood-cutting expeditions in the summer and early fall. There has reportedly been an increasing usage of pack animals (mules and dzo, or yak-cattle cross breeds) within the past 25 years for the transportation of wood. This is thought by some to be an indicator of the growing distances from the villages to the harvesting regions (Sidney Schuler and Krishna Lal Thakali, 1978, personal communication).

The closest source of fuelwood is the Muktinath forest (Jangal, N.), a three to four hour walk from the village of Jarkot. The forest consists primarily of two species--Blue Pine (Pinus excelsa) and Himalayan White Birch (Betula utilis)--which together comprise an area of nearly 400 ha (APROSC, 1983). It is located on the north-facing slopes of the Panda Khola, parallel to and due south of the Jhong Khola valley, with a lower elevation limit of approximately 3,050 m and upper limit of approximately 4,115 m. The local name for this forested region is Liidii.

Although the forest comes under the jurisdiction of the FMC Forest Office in Jomsom it is managed by the Muktinath panchayat in a fairly informal manner. The panchayat determines which species may be cut, how much wood may be harvested, taxes timber and fines offenders. There appeared to be little or no interaction with the Jomsom office, which suggests that the forest has remained under an indigenous management system in spite of the nationalization of forest lands in the 1950's through the return of responsibility, under the Forestry Act of 1979, to the panchayat.

For reasons which are not entirely clear, the villagers of Jhong, Chongkar and Putra depend more on the forest regions of the upper Jhong Khola for fuelwood than on Liidii. This is probably related to old forest boundaries between the two groups of villages which are still more or less adhered to. With the exception of a small sacred birch forest, the predominant wood species found in this region is scrub juniper, which is hacked up live or burned in situ and allowed to dry before its transportation back to the households. In contrast to the three villages of the Muktinath panchayat, villagers in Jhong indicated that they had an exceptionally difficult time procuring fuelwood. It is also of interest to note that these three villages reportedly burn much greater amounts of juniper and dung than do Jarkot, Khinghar and Purang. As with Liidii, the management of this remote region is determined by the Jhong panchayat.

Figure 2 shows the Muktinath and Punda Khola valleys and includes the local names for the various communal pastures and forest regions. In 1982 the people of Muktinath utilized the regions east of, and Lubra villagers the region west of, the indicated stream.

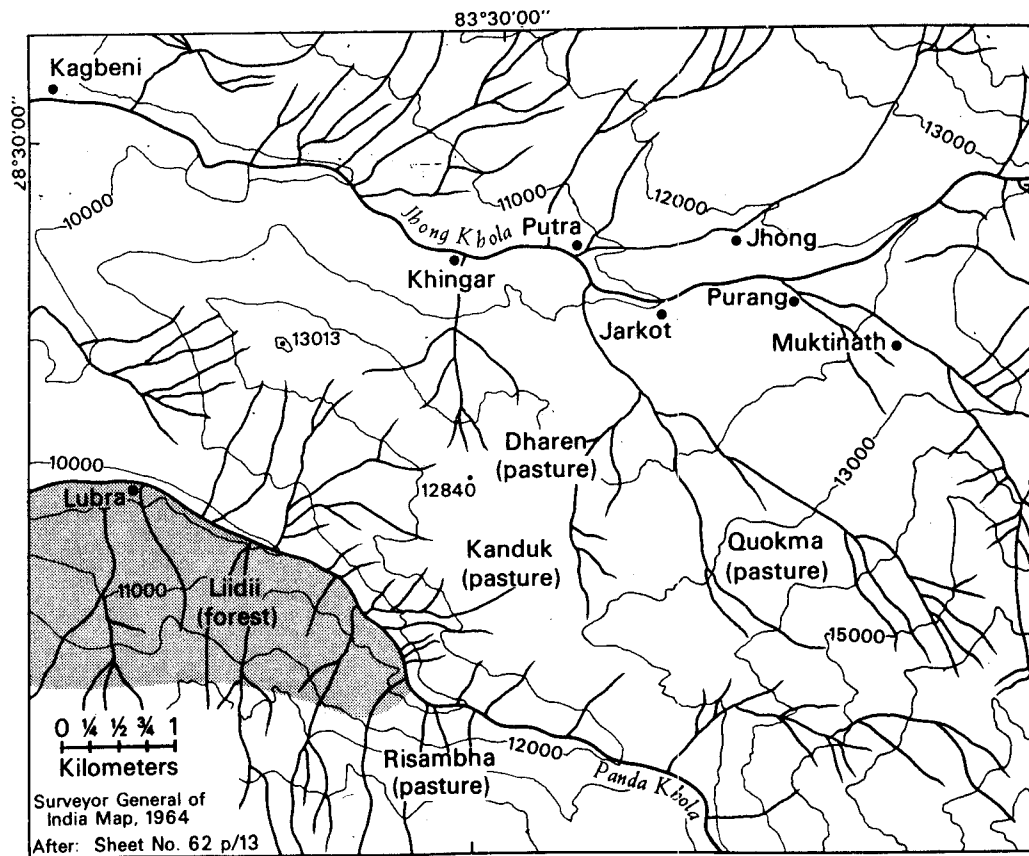


Figure 2. Muktinath Panchayat. Liidii forest region is indicated by the shaded zone.

According to the Muktinath Village Assembly Chairman (Pradhan Panch), the panchayat has set no limit to the amount of fuelwood which a household may harvest for its own use. However, only the wood from dead trees may be cut, and offenders of this rule are subject to fines. There did not appear to be much internal control over this regulation and no system of regular protection (e.g., forest guards) was observed.

Larger lumber (i.e., birch poles and pine logs) for construction purposes is taxed by the panchayat. Individuals must petition the panchayat for permission to cut the larger trees, and taxes are arbitrarily defined depending on the amount requested and the ultimate use. It was reported, however, that most of the larger timber comes from the forests in the vicinity of Thini and Marpha further south, as the truly large trees had been harvested years ago.

The panchayat's ban on the cutting of pine in 1982 indicates the general concern felt for the future of the Liidii forest area (Plate 2). Only birch could be cut, as it was obvious that the more accessible pine was rapidly being depleted. However, it should be noted that most villagers blame the decrease of pine reserves on the Khamba, Tibetan refugees and guerillas who had been involved in periodic skirmishes with China's People's Liberation Army (PLA) since the PLA's advance into Chamdo (east Tibet) in October of 1950. Beginning in 1956 the Khamba allegedly received covert training and aid from several international intelligence agencies (Piessel, 1967; Mullin, 1975; Allman, 1974; Long, 1981), and in 1961 moved to the Mustang District in order to have better access to supplies. The move was also engineered to take advantage of Nepal's neutrality while enjoying a close proximity to Tibet. By the summer of 1962 there were some 6,000 Khamba soldiers in Mustang, Dolpa and Manang, living "...near isolated monasteries, hidden valleys and forest regions" (Piessel, 1967:219). Of note is that the village of Kagbeni was one of three principal supply centers along the vital supply line of the Kali Gandaki, and that the Khamba presence throughout Baragaon and Paanchgaon was high.



Plate 2. Villager of Baragaon packing out shrub Juniperus sp. from the upper Jhong Khola region.

In 1973, under pressure from China, the Nepalese Army forced the Khampa to surrender their arms and to re-settle in numerous refugee camps in either India or Nepal (Asian Recorder, 1974; Singh, 1975; Long, 1981). However, the Khampa had not been without their economic, social and ecological effects upon the peoples and landscape of Baragaon and other parts of Mustang. For example, villagers in many parts of Thak Khola and Lho are said to have been pressured into selling their yak herds; independent trade with China was violently prohibited; the native wildlife, particularly the musk deer and blue sheep populations, were shot to near extinction; native medicinal herb sources were depleted; and forests were heavily cut to provide fuel and timber for the Khamba soldiers. The ruins of one such Khamba fort are located in the Liidii forest east of the village of Lubra and the presence of the approximately 40 soldiers who lived there over a 12 year period is said to have greatly contributed to the region's deforested appearance. Given the natural resentment felt by local peoples for an "occupying army", it is not entirely clear how much of this environmental degradation was indeed an effect of the Khamba presence and how much can be attributed to retrospective feelings of hostility.

As was mentioned, there did not appear to be any regular system of forest protection and offenders of regulations are fined on a "catch as catch can" basis. A typical fine for the cutting of live wood was given at Rs. 100/-, and one unfortunate young man, who was accused of being responsible for the burning of approximately 1.2 ha of pine forest in 1981, was fined Rs. 700/-.

Overall, Liidii appeared to be in fair to poor condition. It is a high altitude forest with a slow regenerative capacity, grazed heavily by livestock. The many stumps observed point to a time when the forest was much thicker, and indeed the villagers of Lubra say that the "mountain could not be seen" (because of forest coverage) within living memory.

Building Materials

In the construction of houses, wood is used in the making of window frames, shutters, doors, horizontal roof beams and supportive vertical beams. Walls, as previously mentioned, are either constructed of stone and covered with mud, or made of earth which is compacted between wooden forms. Pine (Pinus excelsa), both in the old and newly constructed houses, is sometimes transported by man-power from the forests of the lower Kali Gandaki near Marpha and Thini (a supply source of many years) and used for boards and heavy vertical beams. The beams are roughly hand-hewn in the forests, planed and worked in Muktinath. Boards are either roughed out by adze or cut by planksaw from the larger beams.

The forests regions of the Marpha-Thini region consist of cedar-cypress (Cedrus deodara-Cupressus torulosa), pine (Pinus excelsa), pine-cedar, and juniper (Juniperus indica) formations. They cover many of the east- and west-facing slopes of the Kali Gandaki river, beginning

at about 760 m above the valley floor and terminating at altitudes of approximately 3,965 m. In contrast to the barren country north of Jomsom, this region has been frequently noted for its abundance of timber. In fact, over-mature stands of trees, abundant dead-fall within the forests and several burned-over regions have been observed. Its apparent lack of use for fuelwood/timber indicates the relative abundance of trees, and supports the impression that fuelwood/timber supply is not an area of particular concern to the Thakali inhabitants.

All users of the Marpha-Thini forest regions, however, are subject to the rules, regulations and taxes enforced by the HMG Forest Office in Jomsom. For example, structural timber may be obtained only by formally petitioning the Forest Office, which grants or denies the requests based on the actual construction plans and needs. Permits are granted for the harvesting of up to $5.6 \text{ m}^3/\text{Yr}$ with a tax of between Rs. 105/- to Rs. 125/ m^3 , depending on the species required (pine or cypress). Governmental controls over the Marpha-Thini forests appeared to be well enforced and observed by the local people. More efficient forest management practices, however, are required if the full fuelwood/timber production potential is to be maximized.

Normally, the Baragaonle will utilize the Marpha-Thini forests only if the required size or volume cannot be found in Liidii forest. Usage appears to have increased during the past five years due to the building of tourist hotels and new houses; the renovation of monasteries and pilgrimage buildings; and the general deterioration of Liidii forest.

The previously mentioned poplar trees (Populus ciliatus) of the Muktinath valley play an important role in house construction. As cutting (approximately 25 cm long) from the older trees, they are frequently planted in groups of three which can result in a larger, thicker trunk. Coppicing is practiced as soon as the branches attain a desired length (usually 3-6 m). These poles are used primarily as horizontal roof beams, with the space between each pole filled with either split birch or pine prior to being covered with mud or clay. The trees are either individually or village owned. If family owned, the poplar is divided evenly among brothers according to the fraternal polyandry system of estate division. If village owned, the tree may be either used for village needs or sold to an individual, with the price of an average specimen (height: 7.5 m) given at Rs. 4000/-.

Summary

In summary, the demand for wood and wood products in Muktinath currently exceeds the convenient supply. At one time, perhaps as little as 50 years ago, both fuelwood and timber were easily obtained from the Liidii forest. Fuelwood gathering from Liidii now involves greater factors of distance and time, while the main source of heavy timber has shifted to the Marpha-Thini regions. The situation appears to be a phenomenon of the past 30 years,⁵ where additional pressures from the

Khamba and Tibetan refugee populations contributed to a more rapid rate of deforestation.

There appeared to be a general awareness of and concern for the problem in Muktinath. This impression is based on interviews, the indigenous management system and the receptiveness of the Baragaonle toward recent HMG and donor agency projects concerned with afforestation. In general, future energy sources and wood supply take on a much higher priority in Baragaon and Lho than in the better forested regions of the lower Kali Gandaki and the Middle Hills. The current situation, however, will probably be complicated by such factors as population growth, an increase in pilgrim populations and the introduction of tourism, all of which are creating added demands on a forest with an unusually slow regenerative capacity. These are examined briefly below.

INTERNAL AND EXTERNAL FACTORS

Population

Schuler (1980) found the gross reproduction rate (GRR) of four villages in Baragaon to be 1.31 or 1.22, "based on the births during 1977-78 and 1978-79 respectively" (p. 143). The figures are "very low" on the reproduction scale developed by Nag (1976:15), which Schuler references in her study. They most likely reflect the constraints on childbirth resulting from the fraternal polyandrous system of marriage, and the high incidence of stillbirths and infant mortality due to improper hygiene (Charles Ramble, 1982, personal communication).

This trend, however, appears to be shifting in the other direction. Younger people are uniting more and more in monogamous marriages, and health conditions are improving to the point that birth control measures have been advocated (Schuler, 1980). In addition, out-migration from the harsher regions of northern Mustang and Dolpa is reportedly on the increase (Fürer-Haimendorf, 1975; Nelson et al., 1980; Krishna Lal Thakali, 1982, personal communication) and is thought by some to be the main contribution to population increase at present.

Pilgrims

Muktinath has been a pilgrimage site for Hindus and Buddhists for several thousand years. Messerschmidt (1981) writes that Muktinath's ancient name of Salagrama (after the ammonite fossils--sāligrām--found in the region) is mentioned in the Mahabharata (4th century B.C.) and the Purana (4th to 11th centuries A.D.). He also mentions that Muktinath is "listed as one of the destinations on the 'Grand Pilgrimage of India' (Bhardwaj, 1973)". Other accounts by western visitors which

mention the holiness of the place and great numbers of pilgrims include those of Kirkpatrick (1811), Oldfield (1880), Hedin (1916-1922) and Landon (1928).

For over 2,000 years, then, it can be safely stated that pilgrims have placed added demands on the resources (primarily food and fuelwood) of the Muktinath valley. Although records are not kept for pilgrims by the Police Checkpost in Muktinath, their numbers are reportedly increasing due in part to improved networks of transportation in India and Nepal. "High priced bundles of firewood" (Schuler, 1981) are sold to the pilgrims by the Baragaonle on a regular basis. There is no reason to believe, at present, that the situation will change.

Tourists

The Muktinath valley was opened to relatively large-scale, commercial tourism in 1976. Only a handful of westerners (e.g., expeditions, scholars, Peace Corps Volunteers) had visited the region prior to this time (primarily in the 1950's and early 1960's), and the District experienced several periods of complete official closure during the 1960's and early 1970's depending upon concurrent levels of Khampa guerilla activity (Asian Recorder, 1974). Well over half of the Mustang District (from Kagbeni to the Tibetan border) currently remains off-limits to westerners for political, administrative and ecological reasons. The Police Checkpost in Muktinath recorded 3,500 tourists for the 1976-78 period; this had jumped to over 5,000 for the single year of 1981, which is not surprising considering that Jomsom recorded 10,019 tourists, or 36.5% of Nepal's trekking population, for the same year (Shrestha, 1983).

In 1978 there was one tourist lodge in Jarkot, with another being built in Rani Powa fairground region. In 1980 there were a total of four lodges in both places. More fuelwood is now required for cooking, for the sheet-metal wood-burning stoves in several of the lodges, and for the trekking parties which camp in the Rani Powa region. Tourism has already achieved a solid standing in the valley's economy, providing additional income for the Baragaonle through the sale of blankets and souvenirs, wood, food and lodging. Tourists, like pilgrims, appear here to stay.

CURRENT DEVELOPMENT PROJECTS IN LOWER

MUSTANG--PROGRAMS, PROBLEMS AND PROSPECTS

In an earlier work, the author made a number of "Suggestions Toward Conservation" for the Muktinath Valley (Byers, 1979). Briefly, these were (1) the establishment of programs which would increase the level of awareness regarding more sound land-use practices, (2) actual reforestation and management programs for the Liidil forest area, and (3) the investigation of the feasibility of alternative energy forms (solar, wind) appropriate to the Baragaon region. The paper also suggested that

regulations concerning tourist and, to a lesser extent, pilgrim populations be investigated in order to minimize their respective ecological impacts.

It is remarkable that, most coincidentally, many of these items were directly addressed by various HMG and donor agencies in the interim period. For example, the Resource Conservation and Utilization Project (RCUP), mentioned in the 1979 paper, began its land-use activities in Lower Mustang (Jomsom, Marpha, Leta) as of June, 1982 (a nursery at Jarkot was also established at this time). The Remote Area Development Board, under the Ministry of Panchayat and Local Development, was active in drinking water schemes, bridge building and monastery renovation, with plans to construct a 12.5 hectare fuelwood/fodder tree plantation in Jhong panchayat in 1983. The Department of Tourism built an enclosed camping space for trekkers at the Rani Pawa fairground, and the fruit tree sapling and vegetable seed distribution programs of the HMG Marpha Agricultural Farm had expanded considerably into Baragaon and regions further north. The construction of a 260 kw micro-hydel plant near Tuckche was nearing completion in June 1982, which was to provide electricity for Tuckche, Marpha, Syang and Jomsom. Its implications for Baragaon will be discussed shortly. In brief, perhaps only the Sagar-matha (Everest) region received more national and international attention than Lower Mustang in the period 1978-1983. Several of these projects, and the implications of their activities for the Muktinath valley in particular and the Mustang District in general, are briefly discussed below.

Resource Conservation and Utilization Project (RCUP)

By far the largest donor project in Mustang is the Resource Conservation and Utilization Project (RCUP), a "multi-faceted and integrated project that will attempt to halt the rapid degradation of Nepal's environment" (AID Project Paper, RCUP, 1980:35). It is jointly financed by the United States Agency for International Development (AID) and HMG, with contributions of \$27,498,200 and \$5,660,500 respectively over a five year period. Technical assistance is provided by the contractor, the South East Consortium for International Development (SECID), based in Chapel Hill, North Carolina. SECID works in a collegial relationship, with HMG's Ministry of Forests, Department of Soil and Water Conservation, the primary HMG implementing agency. The RCUP has 11 components (Inventory and Monitoring, Watershed Management, Forest Management, Energy, Irrigation, Drinking Water, Community Livestock/Range-Pasture, Agronomy/Extension/Research, Horticulture, Fisheries Development, and Training), including an overarching, integrating Social Science component responsible for effective and appropriate implementation strategies. Each is implemented by the particular HMG line agency most concerned with the respective activities. The project effectively began in July, 1980, working in the Kali Gandaki and Daurandi Khola (Gorkha District) catchment regions.

Theoretically, activities are implemented using a "bottom-up" approach, with Panchayat Conservation Committees (headed by a "recognized panchayat leader" and consisting of 9 additional ward representatives) submitting their recommendations concerning needed land-use projects to the District's Catchment Conservation Committee (chaired by the District Panchayat Chairman, with members from the various governmental line agencies) which in turn forwards these recommendations to the Project's Central Office in Kathmandu. This approach is novel to established project implementation procedures within HMG, as is the RCUP's emphasis on "villager participation" (see: Messerschmidt et al., 1983) for all field projects.

Project implementation in developing countries always seems to proceed more slowly than originally planned, and the RCUP was no exception. In Mustang, the RCUP encountered a number of delays and implementation problems during the first year (1980-81), most of which were related to the project's great size, complexity, the relative remoteness of Mustang and other inherent difficulties of project start-up. By 1981-82, however, the project was well underway and nearly all of the planned activities were completed. Most of the "targeted" activities (i.e., pre-established work items to be completed within a given fiscal year) were implemented between Lete and Kagbeni, which contained the first year's "priority panchayats". A partial list of activities and sites includes grass trials (Lete), nurseries (Marpha, Jomsom, Jarkot) (Plate 3), fuelwood/fodder tree plantations (Marpha, Jomsom, Kagbeni), alternative energy tests (solar heaters and improved stoves in Jomsom and Jarkot; one windmill test in Jomsom; solar dryers in Marpha), watershed protection sites (Thiní) and community water source protection (Jomsom).

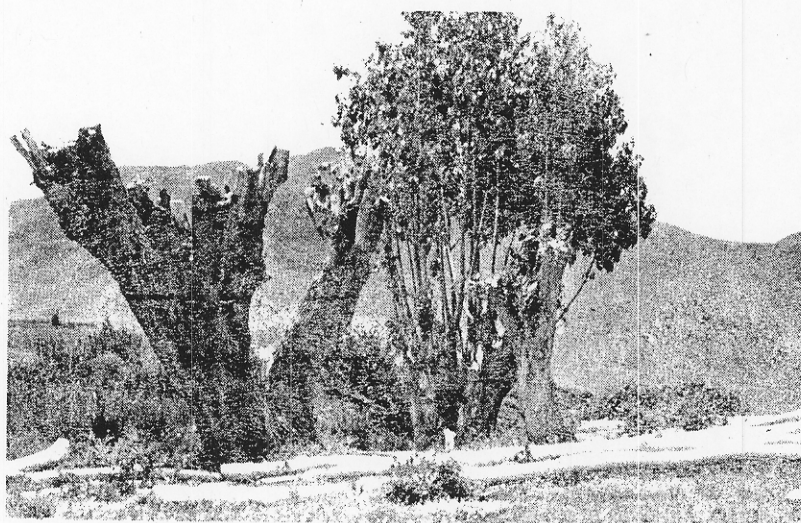


Plate 3. Coppicing of Populus ciliatus in the Muktinath Valley. Poles in the foreground will be used as structural beams for houses.



Plate 4. Testing an "improved stove" in the village of Jarkot.

Certain social aspects of the RCUP (e.g., establishment of the Panchayat Conservation Committees) lagged somewhat behind the physical target implementation as a result of the project start-up difficulties previously mentioned. Activity site-selection was thus largely determined by the Catchment Conservation Committee in Jomsom during the years 1980-82. Panchayat Conservation Committee formation was planned for April, 1983, so it is not possible at this time to assess the Committee's actual performance.

Structurally, the RCUP contains the strategies, funds and components which can directly address the priority problems--irrigation, range/pasture, forestry, energy development--of the people of Mustang. Local traditions of voluntary labor would also appear to be most compatible with the implementation policies of the RCUP, and the high levels of local interest in land-use problems will probably facilitate intervention maintenance and, if demonstrated to be feasible, eventual dissemination. In short, there is probably no area with a greater need for a RCUP than Mustang, and given enough time the chances for land management improvements would appear to be excellent. Most of the implementation problems encountered to date--inappropriate site-selection (e.g., nurseries in a heavily forested, low-priority region), inadequate construction and maintenance of completed "targets"-- can be linked to the problems of project start-up and a corresponding lack of local involvement. Many of these, however,

will probably be corrected once the infrastructure of the RCUP has had a chance to become firmly established. In particular, it will be of interest to follow the progress of the recently formed, decentralized "Gaun Sallah" (village dialogue) approach to panchayat resource inventory and planning (Messerschmidt et al., 1983; APROSC, 1983). In brief, this method involves extensive discussions between RCUP assessment teams, village leaders and villagers prior to the recommendation (and eventual implementation) of future development inputs. The success of other agencies (e.g., HMG's Remote Area Development Board, discussed below), which have used similar though less formalized methods of resource inventory and planning (Krishna Lal Thakali, 1982, personal communication) would tend to show promise for the effectiveness of the Gaun Sallah procedure.

Remote Area Development Board

The Remote Area Development Board (RADB), under HMG's Ministry of Panchayat and Local Development (MPLD), is responsible for the implementation of developmental projects in Nepal's 13 "remote" districts (there being a total of 54 districts in the kingdom). RADB personnel are usually young men from the particular district, who are responsible for (1) the assessment of regionally appropriate projects, (2) the submission of budgets to cover project costs, (3) supervision of construction, and (4) monitoring of the final intervention.

In Mustang, priority in the last two years has been given to drinking water schemes, school construction, monastery maintenance and renovation, and the construction of suspension bridges. In Muktinath, the RADB funded monastery and pilgrim resthouse renovation (Rani Powa) during 1980-82, and assisted with the joint UNICEF/MPLD drinking water schemes in Jarkot and Khingar. Plans for 1982-83 included (1) an irrigation scheme in Khingar and Lubra, (2) a 12.5 hectare fuelwood/fodder tree plantation in Jhong, (3) drinking water development in Chhongar, and (4) renovation of a Buddhist monastery near the Muktinath temple.

Excluding certain cases of faulty construction (e.g., a now-defunct bridge at Marpha) and renovation (e.g., a leaking roof at Rani Powa), the assessment/implementation methodology of the RADB could probably serve as a superb model for other agencies. For example, the RADB representative in Mustang in 1980-83 was a young, local Thakali man with a deep interest in the history and development of the Mustang District. He traveled frequently and widely in the lower and upper Mustang regions and appeared to be known and respected by all ethnic groups encountered. As RADB activities are based entirely on felt-needs, it was up to the local panchayat and villagers to determine which interventions would be implemented. A very high degree of actual participation by the villagers (e.g., carrying cement bags and plastic pipe from Jomsom to Muktinath, digging canals, etc.) was required, due in part to RADB implementation philosophy and also to its comparative shortage of available funds. In short, the employment of local representatives, the villager/panchayat decision-making procedures and the emphasis on

villager involvement usually resulted in fairly successful projects, and removed the RADB from the list of several so-called "give-away" projects in Mustang.

It is of interest to note that the villages of Jhong panchayat specifically requested a large fuelwood/fodder tree plantation. As was mentioned, fuelwood is in shorter supply here than in Muktinath or Jomsom, and energy is a high priority item. Villagers insist, however, that they will plant the area using the traditional method of large cuttings and poles, as the trees "will grow faster and bigger" than the small cutting or seedlings advocated by other agencies. Although the large-scale feasibility of such a practice is not known, this input at least demonstrates the importance of considering traditional practices and priorities before the implementation of activities.

Relative supply of fuelwood, however, is not necessarily the main factor that determines the sense of need or priority. For example, in the village of Tiri, about one half hours walk north of Kagbeni, wood is also in short supply. The RCUP (at the request of the Catchment Conservation Committee, prior to the formation of the Panchayat Conservation Committees) constructed a nursery, but the village reaction was that "they told us to build one, so we did", when in fact they would have preferred apple and fruit trees from Marpha. It thus appears that in some cases the prospects of short-term economic gain still preclude a sense of resource management and long-term land-use.

The emphasis of RADB projects in the coming years will probably focus on the regions north of Jomsom, where it is felt that the need is greatest. Based on the travels and interviews with local people by RADB representatives, these are some of the particular activities contemplated (Krishna Lal Thakali, 1982, personal communication):

1. Construction of bridges and horse paths.
2. Renovation of monasteries.
3. Irrigation schemes in response to the apparently growing shortage of water in Mustang; methods to lift water from the Kali Gandaki (e.g., via windmills or upriver-downriver gravity flow) will be investigated.
4. Range pasture improvements to counter (a) degradation caused by the influx of yak and sheep herds from Tibet during the late 1950's, and (b) the possibility of Tibet closing its borders and winter pastures to Nepal herds.
5. An assessment of the depletion of jumbu (an herb used to flavor dal) in the upper Mustang and Baragāon regions. Reportedly, a high percentage of people in Mustang have traditionally been engaged in the sale of this herb to southern traders. Its growing scarcity, combined with a decrease in demand from the Middle Hills, is another factor causing economic hardship in the area.

6. Establishment of small cottage industries which focus on wool products (sweaters, blankets, scarves) in order to encourage the sale of Nepalese in place of Indian wool.
7. Development of alternative energies, especially solar and wind, because of the chronic wood shortages.
8. Development of cottage industries in Muktinath which could capitalize on the tourist growth, now that traditional winter migrations to Assam for the sale of sweaters (Schuler, 1978) have been prohibited by the Indian government.
9. An assessment of methods to (a) transport and (b) process the projected over-production of apples (65-75 metric tons/year at present) in Mustang. One idea currently being considered is the construction of a ropeway between Jomsom and Pokhara.
10. Agricultural improvements, especially with the production of vegetables.
11. Better use of forests in the Marpha/Thini region, where the abundant deadfall is currently left to decay.

While the RADB could not possibly fund even a fraction of these, the recommendations offer certain insights regarding the current areas of concern to the inhabitants of Baragaon and upper Mustang. Cooperation among agencies such as RCUP, RADB, and UNICEF is a potential method of solving the funding problem, and should continue to be encouraged in spite of past coordination problems.

Small Hydel Development Board (SHDB)

HMG's Small Hydel Development Board, with funding from OPEC, was completing construction of a 260-kw mini-hydro plant on the Chokapani River near Tuckche in 1982. The plant was scheduled to supply electricity for four villages (Tuckche, Syang, Marpha and Jomsom), and poles and high tension wires between the plant and various villages had already been erected.

The project was greeted with great enthusiasm by the Thakali people, who generally saw its benefits in terms of lighting (with less reliance on expensive, imported kerosene) and the availability of electric cooking stoves. Unfortunately, the poles and high tension wires were erected above ground which, for many tourists at least, detracted from the quality of the visual landscape. Viewing Dhaulagiri through wires and around poles does not, probably, contain the same measure of enjoyment as does the more natural prospect. Future hydro projects in the region, in spite of the many and obvious benefits of electrical power, might consider under- vs. above ground wires in response to the growing importance of tourism in the region, and model their efforts after the recently completed plant in Sagarmatha National Park (Brot Coburn, 1984, personal communication).

In 1982 the RCUP employed a Kathmandu-based consulting firm to conduct a feasibility study concerning the establishment of a mini-hydro unit in Mustang (one of three such units "targeted" under the energy component). The site selected was on the Jhong Khola near Kagbeni. Preliminary reports indicated that the seasonal water flow was sufficient for electricity generation, and other considerations of the study (cottage industry potential, mechanical power, affordability, benefits/costs) were being investigated at this writing.

The benefits of such a project would seem intuitively obvious, and the Baragaonle themselves place a very high priority on the electrification of their valley. A decrease in the need for fuelwood and kerosene was often stated as the primary benefit of a mini-hydro plant.

Marpha Agricultural Farm

Perhaps the project with the most far-reaching effects in Mustang to date has been HMG's Department of Agriculture Horticulture Farm in Marpha. As has been mentioned, the farm has experienced a very high degree of success in the growth of apple, apricot and peach trees in the arid climate found here, and is also active in the production of vegetable seeds. Marpha apples, brandy and wine are already famous throughout Nepal, and many new orchards can be seen in the Paanchgaon region.

The interest in orchard establishment among the Baragaonle and Lopa peoples has also become quite high, and villagers may often be seen buying the subsidized seedlings at the Marpha Farm. This, however, contributes to the present concerns of over-production of apples in Mustang due to the lack of transportation networks. Solar drying has been advocated and tested by some agencies, and the availability of electricity may also provide certain processing possibilities. A ropeway, as was previously mentioned, is being considered, which would appear to provide an excellent transportation alternative. The eventual construction of a motorable road from Beni (in the south) to Jomsom is another item under informal discussion.

Department of Tourism

In 1982, HMG's Department of Tourism built an enclosed camping space for trekkers in the Rani Powa Fairground region. It was surrounded by a stone wall and did not contain toilet facilities, which were planned for the next fiscal year (1982-83).

The permanence of the structure negated the possibility of camping-site rotation, which may be preferable in the long-run due to the delicate alpine plant life found in the area. However, there appeared to be little alternative because of land ownership conflicts, which necessitated the purchase of the land by the Department of Tourism.

Nevertheless, if the volumes of group-trekking parties continues to grow, the requirement that they camp within this space may help to prevent the general degradation of the Rani Powa region.

SUMMARY: FUELWOOD

Muktinath's proximity to the administrative center of Jomsom, among other things, has placed it in a unique position as recipient of numerous development projects. Most of this has occurred in the past 5 years, and will probably continue in the future.

The RCUP in particular, and the RADP in general, have taken steps to introduce solutions to the fuelwood shortage in the form of nurseries and fuelwood/fodder tree plantations. These measures are not often particularly well received in various Middle Hill regions, due to the relative abundance of wood supply and, perhaps, project implementation methodologies. However, the Baragaonle appear to have embraced the concept of a medium- to large-scale reforestation of their valley, and the nurseries and plantations are generally seen as "wise moves" (Sherab Gurung, Muktinath Pradhan Panch, personal communication). They are, in fact, extensions of a pre-existing emphasis on valley reforestation in the form of planting trees (poplar, willow) along irrigation canals (Byers, 1979). Although this is mostly done in the belief that the trees will help staunch the seepage of water through the porous soils, a greater abundance of fuelwood/building supplies is another benefit anticipated. Photographs taken in 1978 and 1982 show a marked increase in the number of newly planted trees. With the addition and propagation of fuelwood plantations, the change in the next five years could be even more striking.

On the other hand, serious consideration of the Liidii forest management prospects, other than informal inventories (APROSC, 1983), have yet to occur. The birch, pine and juniper from Liidii still constitute the primary wood-types used for fuel, and they are being cut with a minimum of supervision and regulation. The panchayat regulates the forest's use in a rather informal manner which, judging from the physical state of Liidii and the various external factors mentioned, is and will be insufficient for a future sustained yield of fuelwood.

The RCUP has planned, for the fiscal years 1982-83 and 1983-84, to promote the objectives of HMG's Forestry Act of 1979 by assisting the panchayat in the designation of Panchayat Forests, Panchayat Protected Forests, Leased Forests and Private Forests. Liidii will undoubtedly fall under a Panchayat Forest category, which alone will do nothing to alter the current indigenous management system. The difference, however, may lie in the designation of various protected forest regions within Liidii, the assignment of forest guards and the availability of high-altitude regeneration and management expertise (see: Brown, 1982).

The latter point contains important implications for Baragaon and other similar arid regions. As was mentioned, reforestation efforts to date have centered on the propagation of valley species such as willow

and poplar. Little has been done regarding the high-altitude forests which lie on the north-facing slopes of many tributary valleys of the Kali Gandaki. Research and trial revegetation programmes using indigenous tree species are clearly indicated for Liidii and the Muktinath valley (see: Brown, 1982), and the knowledge gained could be directly applied to the other areas mentioned. Liidii's relative closeness to Jomsom is another factor in its favour as a potential test site, as supplies and expertise are more easily obtainable.

It should be mentioned that this area of study does not necessarily correspond to the Middle Hills "model" of deforestation causing increased runoff, erosion, siltation of water courses, etc. (see: Rieger, 1977). Rather, it addresses the regenerative capacity of arid-zone forests where a sustained yield, environmental quality and an apparently increasing desertification process are the main priorities. The latter point obviously crosses many land-use boundaries--irrigation practices and range/pasture use in particular--and more research in the prevention of further desertification in Mustang is certainly indicated.

Alternative Energy

The introduction of electricity could provide considerable savings of fuelwood for many valley inhabitants. The RCUP feasibility study concerned with this had not been completed at this writing, so that the actual prospects of mini-hydro installation are not known. However, even with the majority of the population switching to electric stoves for cooking purposes (a prospect difficult to imagine within the next 10 years) wood would still play an important role in construction and for space heating purposes during the winter months and cool evenings.

The development of other alternative energy sources could also considerably reduce the dependence on fuelwood, in some cases. High levels of solar insolation make certain solar technologies, such as solar water heaters and dryers, particularly applicable. A 60 litre solar water heater manufactured at Balaju Yantra Shala in Kathmandu is priced at approximately \$300.00 (including all attachments, but not transportation) and their applications in tourist lodges have already been demonstrated. They would not, necessarily, be a high priority or even affordable item among most of Muktinath's inhabitants, who do not normally use hot water. Nevertheless, the trekker's affinity for hot water, his/her willingness to pay for it (Rs. 5/- per shower) and the savings in fuelwood are points to consider. The remoteness of the region is, however, a major inhibition to the dissemination of solar and other technologies, as even the limited warranties provided by the manufacturers are worthless when one must transport a heater to Kathmandu for maintenance.

Other solar technologies tested to date include solar fruit/vegetable dryers and solar stoves. The Marpha Farm has had good results with one solar dryer developed by the Research Centre for Applied Science and

Technology (RECAST) at Tribhuvan University, for the drying of apricots. The glass, wire screening, rubber channeling, drawer handles, etc. must, however, be imported from Kathmandu. If shown to be feasible they would still probably be affordable for many Thakali entrepreneurs, but not to most Baragaonle, Lopa and other ethnic groups.

Solar stoves ("Haybox Cookers", reflector cookers) have been tested to a limited extent by the Marpha Farm, UNICEF, and independent researchers. While the devices appear to work fairly well they still involve certain cultural inconveniences which could make dissemination difficult.

Obviously, the main constraints to the dissemination of alternative technologies has been cost and lack of maintenance facilities. Poor performance has been another factor, as the devices have often been unproven and their installation in Mustang a test in itself (e.g., a shattered RCUP-funded windmill in Jomsom, a frigid UNICEF-funded "solar heated" hotel in Jarkot). Nearly all have been developed by foreign and Nepali engineers or researchers in Kathmandu, and this support of in-country energy entities should certainly be continued. However, the tendency is often one of "re-inventing the wheel", when somewhat more proven devices (e.g., Dempster windmills, solar space heating technology) are available from international sources. Importing one model whose specifications match the conditions found in Mustang, testing it and then promoting in-country manufacturing of a similar device would appear to save considerable hardship, time and money.

Much has been written concerning applications of alternative technologies to the land-locked, fossil-fuel dependent situation found in Nepal. To date the progress has been less than satisfactory. Above all, the cultural and ecological diversity of Nepal point to the need for site-specific tests and applications, prior to the making of generalizations. Technologies designed to exploit the solar, wind and water resources of Mustang should thus continue to be tested. Data and experiences from Ladakh and Tibet, with their similar environments but somewhat more advanced information network, should also be explored.

Tourists

An informal survey of lodges in the Jomsom/Muktinath region showed that the average tourist lodge requires 373 kg of wood per month, as opposed to approximately 231 kg for a family of five. Some, with sheet-metal space-heating stoves and "hot shower" (a bucket of hot water) facilities use considerably more; others without these items use somewhat less. As was mentioned, wood will continue to provide the energy for space-heating stoves in the foreseeable future, and demand will grow along with tourist, pilgrim and local populations. Above all the situation fortifies the need for a sounder management of the local forest regions. Modifications in the stoves themselves, with chimneys often 6 m in height and no damper controls, would also be worthwhile considering.

Pressure cookers have become very popular in many households, and their use should continue to be promoted. "Improved stoves" will require an extended performance and evaluation prior to attempts at widespread dissemination.

Solar heaters are fairly widely used in Jomsom lodges, and one has been installed at a lodge in Rani Powa. This was unfortunately not in use due to a leak which the owner was unable to fix, even with the help of local blacksmiths (kaamfi, N.) or the application of pitch. In this case, remote area maintenance solutions are clearly indicated, which the manufacturers should be encouraged to investigate. The income generated from solar heaters for tourists, and the savings in wood, at least demonstrates the feasibility of solar water heaters along trekking routes.

As was mentioned, a "solar heater hotel" in Jarkot was built in 1976 with funds from UNICEF. This was unfortunately not functioning as designed, and in one sense demonstrated the lack of follow-through, and loss of credibility among local peoples, which some projects experience. Solar space heating, however, remains an area with a very high potential in Mustang and should continue to be tested.

Camping spaces such as those built at Rani Powa will lighten the effects of tourist groups on the fragile alpine environments. It remains to be seen whether or not the single area designated for tourists will be sufficient to handle most of the traffic, or even if it will be a desirable place to camp. Rotation of camp sites would also appear to be an area of future consideration.

Any regulation of tourist traffic would probably be most unpopular among the Baragaonle and is not a probable solution. Lessening the demands of tourists by internal means such as those outlined above will probably continue to form the main strategy.

Pilgrims

Compared to tourists, pilgrims exert fewer demands on the valley's resources for financial, travel-style and length of stay reasons. While wood is sold to pilgrims, they were often observed carrying their own bundles of sticks gathered along the way; food is also carried up on occasion. Pilgrims almost never stay in tourist lodges and do not use hot water. Again, dealing with the demands they do place on the valley probably relates more to the forestry management considerations previously discussed, as the regulation of their numbers is not a feasible alternative.

CONCLUSION

Five years ago, the Muktinath valley represented a somewhat typical, arid-zone region in Nepal. Its environmental problems reflected those of the "arid-zone model" discussed previously, where the threat of desertification through land mis-use is more immediate than the prospects

of soil erosion, landslides and silted watercourses characteristic of many Middle Hill regions.

Muktinath today, however, differs from all other arid-zone regions primarily because of the development attention it has received in the interim period. Already, however, the importance of understanding certain elements prior to project implementation has been demonstrated. These include the respective environmental/social processes at work (e.g., reasons for deforestation, historical factors, amount of wood required, local social or environmental constraints to afforestation), corresponding site-specific alternatives, and the role of these alternatives in the context of a populations needs, priorities and available resources. Other factors which can contribute to more successful project implementation include the hiring of local people as project coordinators, and the coordination of different development agency activities to avoid duplication. It will be of great interest to follow the progress of the various development projects in Mustang as many of these items are addressed in the near future.

Nevertheless, practically every innovation in Mustang to date represents a beginning which has increased our knowledge of arid-zone development and land management in Nepal. Obviously, much work remains, and it is still too early to predict what effects the various projects will have on the perceptions and actual forest management practices of the Baragaonle. Intuitively, enough attention is being focussed on these areas that the prospects for improvement would appear to be good, and that noticeable differences will occur within the next 5-10 years.

Few other arid-zone regions, however, can hope to receive comparable amounts of aid and assistance within the same time frame. It is thus of critical importance that all forest-related activities in Baragaon be thoroughly monitored, so that any transfer of technology to these more remote and inaccessible regions may have the best chance of success.

Similarly, Baragaon can represent a "proving" ground for other priority projects (irrigation, energy, range/pasture); the role of the panchayat in determining activity site-selection and, perhaps most importantly, project success; and the cultural/economic/environmental considerations associated with tourism. Hardware and technical assistance is more easily available to Baragaon than to other regions, a situation which will probably not change significantly within the next 5-10 years. Interactions with panchayats and insights regarding the effectiveness of the PCC's would also be more convenient and available. Baragaon's experiences with tourism would also appear to be valuable for other remote and arid regions, some of which will most likely be opened to tourists within the near future (e.g., Dolpa).

Although this paper specifically addressed the fuelwood and energy situation in Muktinath, it is obvious that they are only parts of the overall developmental picture and cannot be viewed as separate entities.

For example, forest regeneration may be related to livestock control, which may be linked to improving pasture conditions. Local acceptance of nurseries, plantations or forest regulations may be influenced by the initial provision of higher priority items such as irrigation, pasture improvements, monastery renovation or agricultural schemes. The complexities of project management and corresponding political factors can often prevent the implementation of strategies which are sensitive to these elements, even though they appear to be contained in the project documents.

In all fairness, however, very little time has passed since a general awareness of land-use problems in the Himalaya was established, and projects intended to counter the adverse processes were designed and implemented. The response of donor and national agencies, particularly in Nepal, has been remarkable. Much remains to be learned, however, in what is essentially a new field of mountain resource management and development in third world countries.

NOTES

1. This figure is based upon data collected in Jomsom between March and July, 1982, using an anemometer supplied by the Engineering Division of Balaju Yantra Shala, Kathmandu, Nepal.
2. The panchayat ("Council of Five") is the village-level body of decision makers in Nepal's party-less system of democracy. The term also refers to those villages and land under the council's jurisdiction, separated into nine "wards" and usually containing between 2,000 and 4,000 people.
3. "Baragaon" means "twelve villages" in the Nepali language, but the fact that 19 villages exist in the region today is probably the result of administrative boundary changes more than an indication of population growth (Schuler, 1981).
4. Lupra has historically been a center for the study of the Bon religion. See: Fürer-Haimendorf, C. von, 1981, p. 194; and Messerschmidt, D., 1974. Social status, conflict and change in a Gurung community of Nepal (Ph.D. dissertation, University of Oregon), for references to Gurung travel to Lupra.
5. As is mentioned, the forests of Thini and Marpha today supply the large structural timber for most of Upper Mustang. Piessel (1967: 236) was under the impression that Mustang was more heavily forested in the past, and that climatic change in the form of a drying trend was largely responsible for the loss of much of Mustang's forest land. His "scientific facts" are unfortunately not referenced. However, it is of interest to note that Mustang as a "pure and green" land is a common theme in local folklore; that numerous abandoned villages exist throughout the district; and that there

are unverified reports of ancient Buddhist lama biographies describing Mustang as green and well-watered. An interesting work on a similar topic may be seen in: Patti, C., 1983. Climatic change in the Himalayan region. Unpublished manuscript, Department of Geography, University of Colorado, Boulder, Colorado.

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Book Review

The Mollas of Mustang: Historical, Religious and Oratorical Traditions of the Nepalese-Tibetan Borderland, 1983. David P. Jackson. 248 pages. Library of Tibetan Works & Archives. Dharmasala. Price not given.

David P. Jackson has been engaged in the study of the history of Mustang (also called Lo, or Blo in Tibetan), a trans-Himalayan tract in the upper basin of the Kaligandaki river in north-central Nepal, for about a decade now. His two articles, on 'The Early History of Lo (Mustang) and Ngari' in *Contributions to Nepalese Studies*, Vol. 4, No. 1, pp. 39-56, 1976-77, and on 'Notes on the History of Se-rib and Nearby Places in the upper Kaligandaki' in *Kailash*, Vol. 6, No. 3, pp. 195-228, 1978, affirm this and give us the first searching accounts of Mustang's historical past which can be rendered only by an accredited Tibetologist like him. He had to compile and collate his material from diverse and scattered sources in Tibetan the more important of which have been incorporated in the present work.

In Jackson's words, 'molla', in Tibetan, signified a 'speech.' Rendering of 'speeches', according to him, was an acknowledged part of the Tibetan Buddhist ritual on special occasions, the purpose of which had probably been to form a bond of beneficial relationship between the monks and their more wealthy lay patrons. Praises made by monks in such 'speeches' to their patrons would bring munificent endowments to the monasteries from the latter. Despite the 'speeches' being a part of the wider Tibetan religious and cultural traditions, the complete texts of the 'Mollas' as such, however, have been found only from Mustang and nowhere else. Jackson gives the following etymology to 'Molla': molla < mol ba < 'bel gtam or alternately, mol gtam or mol tshig. The recitation of the Molla to a religious assembly consisting of the King, his aristocracy and the monks was a traditional practice in Mustang. The tradition, however, may have discontinued towards the close of the 19th century. Michael Peissel, a French author, who briefly visited Mustang in the early sixties, witnessed something similar to a 'speech' recitation before an assembly of the village in Ghiling in 1964. A team of scholars at CNAS carried out a spell of field-work in Mustang in the summer of 1983 of which I was also a member. We were then told by local informants that the task of reciting the Molla had been the responsibility of the abbot of the Tsarang monastery. This could be true in view of the fact that the seat of the abbot in Tsarang Gompa was normally reserved for a brother of the king of Mustang--a practice which seems to have come into vogue from the time of the first Tsarang abbot, Glo-bo-mkhan chen Bsod-nams-lhums-grub (1456-1532), brother of King Bkra-shis-mgon.

It is quite natural, therefore, that mollas mention and glorify kings and their acts of charity towards the religion, i.e., Buddhism. Soon enough, the Mollas took the form of a genealogical account of the royal line. Mollas in their more complete and formalised forms also came to incorporate a few features from Tibetan history and myth-writing: sections of it describe cosmology and geography as derived from Buddhist canonical sources. In the genealogical rendering, too, the Tibetan tradition is unmistakable, because a Molla gives in it the origins and descent of the ancient Tibetan monarchs.

It was not Jackson who made the first discovery of the Molla texts. It was Peissel who came across a couple of them in the course of his stay in Mustang. He, too, was the first to realise the historical potential of the Mollas and make a feeble attempt at Mustang's history on their basis. However, a scholarly justice to the Mollas has been done only by Jackson. In editing them, his interest has naturally led him beyond Mustang's history and toward the understanding of the wider Tibetan literary and cultural setting. It is a slim book of 248 pages including a bibliography and indexes. There are eleven chapters in the book each neatly and concisely written and bolstered with copious footnotes. In the first two chapters are discussed the physical setting and the previous research done in Mustang. Chapter 3 discusses the various texts of the Mollas. These are five in all, and a kindred text, called the Gelung Speech. Chapter Four analyses the structure and content of the Mollas. The following three chapters show the Mollas to be linked to the Tibetan historical, religious and oratorical traditions, the focus underlined in the subtitle of the book. The remaining four chapters focus on the historical materials incorporated in the Mollas, including an edited rendering of the Tsarang Molla in Roman. An appendix also reproduces in Tibetan the Molla text from Namgyal. On their own the Mollas would be able to provide a less than reliable history: some of these are contradictory even with regard to the line of succession of the kings. But Jackson has appraised the Mollas critically, checking and rechecking them against other available sources (published or unpublished)--among which the gdung rabs of the Lo kings is particularly important.

A greater justice to the review of Jackson's book can only be possible from a qualified Tibetologist. My own review here has been prompted by a desire to record an appreciation of his work, because it has been invaluable for consultation to the CNAS team in a dissertation form prior to its present publication. I merely wish to add a couple of supplementary informations that came to be known to us during our field work in Mustang. We, too, came in possession of a copy of the Molla (from a resident of Gharphuk) which on examination proved to be identical to Jackson's Tsarang Molla (No. 1) except in a few minor respects. One variation occurs on folio 11 which inserts this additional passage. It reads: "the religious king A-mgon-bzan-po established the four large monasteries of assemblage to the four cardinal points of mkha'- spyod-steng, namely Brag-dkar-theg-chen-glin to the south, Phu-phag--bsam-gtan-glin to the north, Ri-cin-sdoms-gsum-glin to the east, and Byamps-pa-bcad-sgrub-glin to the west." Another variation comes at the end in the

name of the last king mentioned. This, according to the Gharphuk Molla, is dNos-grub-spen-pa. He probably is the same person as dNos-grub-dpal-'bar mentioned in some of the other documents we found and from which the reign of this king seems to fall between 1871-1893. The last king in Jackson's table is mentioned as A-ham-kun-dga' -nor-bu (c. 1837-1855). However, between this king and dNos-grub-dpal-'bar, there was one more king who ruled. He is 'Jam-dbyans-dban-'dus--for whom we have got two dates, 1859 and 1861. It is surprising that this king is left out in the Gharphuk Molla.

For the genealogy of kings before Kun-dga'-nor-bu, Jackson's conclusions, I think, are unassailable and his approximation of time for them also seems generally reliable. We found one document in course of our research which seems to be of considerable importance in fixing the chronology of some key events in Mustang's history. It is a dkar-chag of 'Byamps-pa monastery. It was written after the renovation of the monastery at the time of King Bsam-grub-dpal-'bar (10 b in Jackson's genealogy of the Molla) in the water and rabbit year which should fall in the year 1663. Now this year has been used like a datum in the dkar-chag for computing other past events of Mustang which is quite revealing. For example, the birth of A-me-dpal, the first king to establish an independent kingdom in Mustang, is said to have occurred 276 years before the renovation of the monastery. Similarly, the birth of King Amgon-bzan-po is given as occurring 244 years before 1663, establishment of the capital at Lo happening 223 years before this, and the first construction of the 'Byamps-pa monastery having been carried out 216 years before it. There are also other dates calculated in this manner in the document and a separate article on this dkar-chag is being written by Mr. J.M. Gurung, a member of the Mustang research team, in an issue of the Contributions to appear later.

Mustang stands unique in some respects from the other Himalayan regions of Nepal. First, no other region can probably boast of the same antiquity as well as continuity in its history which Jackson's researches have more than amply proven. This fact did not fail to impress even the rulers of Nepal in Kathmandu who decided to confer the title of rājā (local king) on the Mustang ruler--a practice which still continues. Second, Mustang's poverty and relative backwardness in comparison to some of the other Himalayan regions of Nepal is obvious. Jackson has not dwelt long on this problem except in making a cursory note of it (p. 4). He quotes a passage from Gene Smith who also hints at this problem (p. 18). Gene Smith comes up with some reasons for explaining it but, I believe, he has succeeded in answering the problem only in part. He and Jackson pinpoint three main reasons to it. The first is Mustang's internecine war with its neighbours; the second, the redirection of the lucrative Tibetan Trade route through some other passes; and third, the passing of the trade initiative into the hands of the Thakalis during the 19th century. While all these reasons played their respective parts, it still does not answer why Mustang should continue to be so backward even after its incorporation into Nepal in 1788. A greater share of the blame for this continuing situation, as also for

the historical past, in my opinion, should go to the Mustangi Raja, who exercises his authority among his subjects even now in the manner of a feudal lord of mediaeval times. In his exploitative presence, his people have little freedom and opportunity to reap advantage through individual skill and enterprise they may wish to undertake. The endorsement of the Mustangi Raja's authority by HMG of Nepal leaves the common people there little option to seek redress outside. Jackson, surprisingly, has failed to take note of this fact in his book.

A greater merit of Jackson's work lies in the fact that he could write such an authentic account of Mustang without ever setting foot on its soil. The territory of Mustang above Kagbeni has for quite some time been a restricted zone for foreigners. Notwithstanding this, Jackson has been extremely successful in his endeavour even with the use of his 'remote-sensing' method, as it were. We can well imagine what the quality of this book would have been had he had a chance to visit the heartland of Mustang.

- Prayag Raj Sharma

Book Review

The Newari Language: A Working Outline (Monumenta Serindica No. 14). 1983. Kamal P. Malla. 104 pages + Bibliography. Institute for the Study of Languages and Cultures of Asia and Africa, Tokyo University of Foreign Studies. Tokyo. Price not given.

Foreign scholars who have read and used Jørgensen's pioneer work on A Grammar of the Classical Newari (1941) may have often wondered why this is the only authoritative grammar that is available in the language. While classical Newari is obviously an essential tool in the study of the development of the Himalayan languages, there is now an increasing need for a comprehensive and useable reference grammar of contemporary Newari. The native writers and scholars who have attempted various grammatical descriptions of the language show widely divergent approaches and these are neither comprehensible nor accessible to non-native scholars working in Newari linguistics and the socio-cultural systems of its speakers. Malla's present Outline of Newari serves in many ways to fill this gap. He has chosen to call it a 'Working Outline' and a step in compiling a reference grammar of the Newari language. The approach to the preparation of this work is made explicit in the Preface where Malla states that "its main purpose is to get the facts of the language straight" and goes on to add that "it is by no means a complete or final statement". While no grammar can claim to be complete or final, Malla's Working Outline represents a concise and meticulously prepared State-of-the-art report on our present knowledge of the Newari phonology, morphology and syntax.

The book consists of six chapters on Phonology, Morphology, Inflection, Morphophonology, Morphosyntax and Syntax. The inclusion of the chapter on Phonology is significant in that Malla recognizes the sound system of the language as an integral component of a total grammar. The T-G bias that this hints at however is not ruled out by the traditional phonemic approach of listing and classification that constitutes the chapter. The section on syllable structure, for example, can be misleading without co-relative reference to the morpheme structure of words from which various syllable shapes have been derived. The task of the phonology is to predict syllable structure and syllable boundaries from the morphological information. It is therefore necessary to say how syllable relates to morpheme within a grammar.

The second chapter on Morphology analyzes a variety of compounding, affixation and reduplication in root words and provides a revealing picture of the productive processes in word morphology of both nominals and verbs. It is not clear why a separate chapter is devoted to inflections since these are normally considered to be morphophonemic processes and could very well have been incorporated under that chapter. It gives one the impression that the alternations involved in inflections have quite

distinct morphological conditions. The approach to the Morphophonology of Newari verbs, for example, is a logical continuation of Verb inflection in that they both deal with inflections of the five classes of verbs. The analyses of finite and non-finite verb forms perhaps need not be assigned to separate chapters. Similarly, Noun inflection and the Morphophonology of nouns cover basically the same ground. It is to be noted that the historical development of Newari nouns sketched in the latter chapter (44-46) applies to noun morphology in general. In any case, the segmentation problems relating to the morphological and syllable structure of Newari words need to be quite explicit. The inconsistencies in the segmentation of morpheme breaks may lead the reader to some confusion: words such as manu:ta 'men', kijāpī: 'brothers', jimisā: 'by us' etc (31-32) do require morpheme breaks, while the lost final syllables of words such as ku-thi 'spade', saphu-li 'book', bha-ti 'cat', etc. (45) belong properly to the stem nouns and not represented as separate morphemes (assuming, of course, that the hyphen is the convention adopted to indicate morpheme boundaries). This problem is partially remedied in the sections on the morphophonology of verbs (43-44), but the sections on nouns and stem alternation in morphological cases (44-46) may have left the reader utterly confused as to the morphemic status of words, i.e. what constitutes a morpheme and what does not. If dhola-e 'on the line' is correctly segmented, dhola 'by/from the line' is not. It is difficult to defend such irregular representations since morpheme boundaries do not coincide with syllable boundaries in every instance in Newari. This problem applies especially to oblique case forms where one may well, have to posit innumerable locative/ablative suffixes if the morphological composition of the old stem nouns is not recognized. Needless to say, every writer has his own transcriptional preferences, but we do need to state the values of the symbols used and whether the transcription is phonetic, phonemic, orthographic or some combination of these. Morphosyntax is happily free of ambiguities that detract from correct interpretation of the given data. This chapter is basically classificatory in approach and covers a wide range of morpho-syntactic facts in nominals, verbs and particles. The treatment of these individual items of grammar is neither detailed nor exhaustive, but gives one the impression of conciseness and neatness.

The final chapter on Syntax forms the essential core of the book. It is, as it were, the syntactic component of a Newari grammar containing within it a complex but highly ordered system of rules that generate sequences of words at the phrase level, the clause level and the sentence level. While Morphosyntax focuses on grammatical categories and functions, Syntax is by far an exhaustive exposition of the mechanics of Newari sentence structures. The survey of phrase types, clause types and sentence transformations (causativization, nominalization, eventivization, stativization, etc) provides a clear insight into the syntactic rules and constraints that are implicit in contemporary Newari. All such rules are subject to fairly strict constraints on their application. The rules of sentence embedding in Newari, for instance, require specific embedding markers depending on the nature of the embedded clause, and word order at the phrase and clause levels is peculiar to a SOV language where nominal

and verbal modifiers have restricted movements within any sequence to indicate semantic focus. The section on causativization brings out the interesting point that at one stage Newari may have been a language with prefixes and the Proto TB sibilant *s, as posited by several TB linguists, is evident in what has been called the 'suppletive causatives' that have survived in present-day Newari (97-99). The book concludes with a preliminary note on Ergativity and the notion of 'subject' in Newari. Following Kölver (1976) and Hale and Watters (1973), Malla rightly concludes that Newari is partially ergative and that it is an 'Actor - Undergoer' rather than a 'Subject - Object' language.

The book will be of immense benefit to linguists as well as teachers. It could in this sense be used as a reference manual for linguistic analysis and also serve as course materials for discussion of practical problems in the classroom. A noteworthy aspect of the book is the importance the writer has given to linguistic argumentation and judgements of grammaticality. Such judgements are always supported by data that are well selected, organized and analysed. Language data for its own sake however are of limited interest, but Malla has handled them judiciously and with perspective. The descriptive statements made in the book characterize the rules of the language-rules that are made explicit by the intuition of the writer as a native speaker. In the final analysis, this fairly short Outline has focussed with remarkable clarity the syntactic and semantic properties of modern Newari sentences and provided a solid base for a more comprehensive reference grammar of the language. One can only hope that the process of compiling and updating the grammar of Newari will not stop with this book.

- Tej R. Kansakar